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WATERSHED PLAN

AND

ENVIRONMENTAL IMPACT STATEMENT

FOR

WATERSHED PROTECTION, FLOOD PREVENTION, AND DRAINAGE

CHOCTAW BAYOU WATERSHED

West Baton Rouge, Pointe Coupee, and Iberville Parishes, Louisiana



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WATERSHED PLAN

and

FINAL ENVIRONMENTAL IMPACT STATEMENT

For Watershed Protection, Flood Prevention, and Drainage

CHOCTAW BAYOU WATERSHED

West Baton Rouge, Pointe Coupee, and Iberville Parishes, Louisiana

February 1976

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WATERSHED PLAN

CHOCTAW BAYOU WATERSHED

West Baton Rouge, Pointe Coupee, and
Iberville Parishes, Louisiana

Prepared under the Authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress, 68 Stat. 666), as amended, and in accordance with the National Environmental Policy Act of 1969, Section 102(2)(C), Public Law 91-190.

Prepared by:

Upper Delta Soil and Water Conservation District
West Baton Rouge Parish Police Jury
Pointe Coupee Parish Police Jury

With assistance by:

United States Department of Agriculture
U.S. Soil Conservation Service
Forest Service

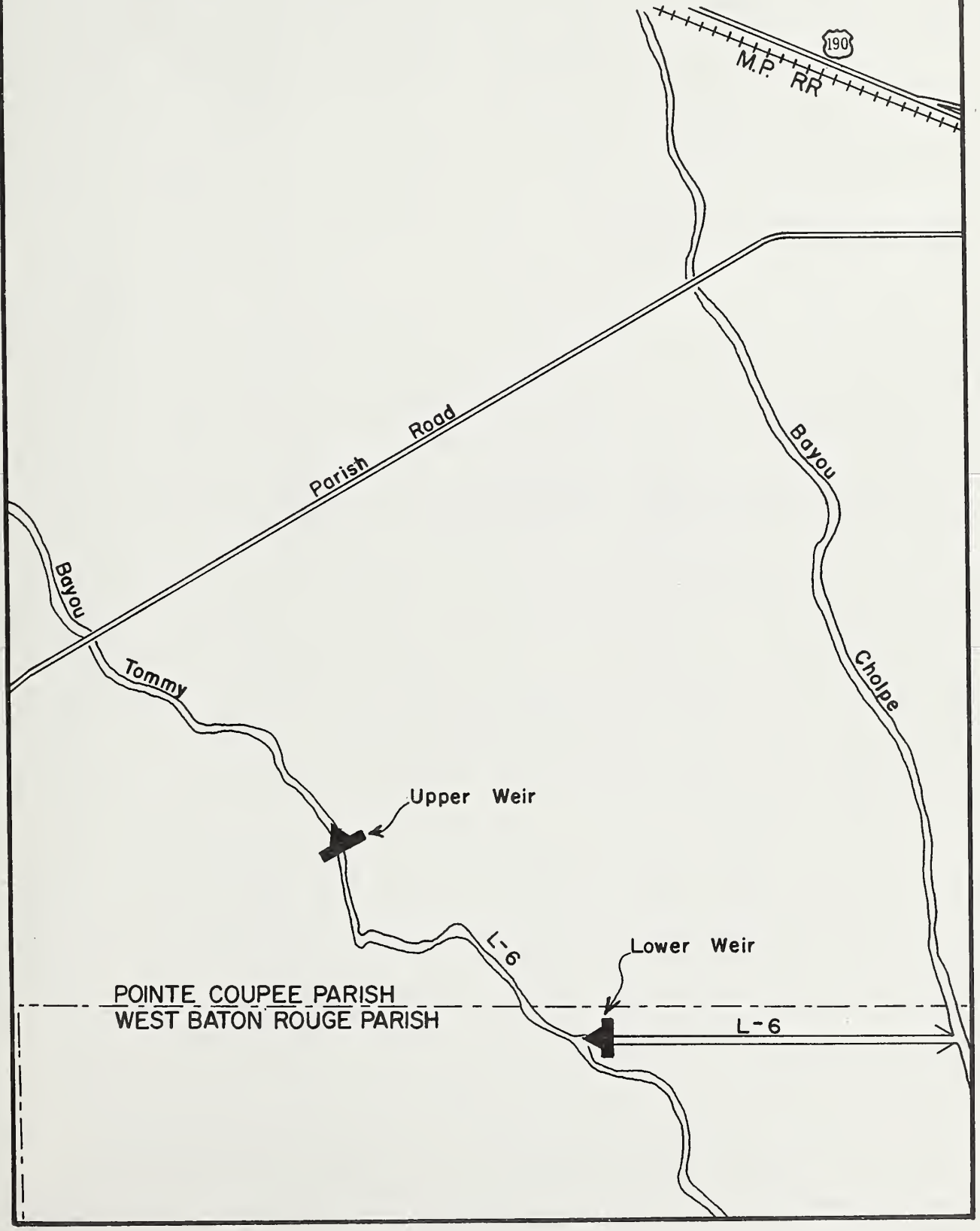
United States Department of the Interior
Fish and Wildlife Service

State of Louisiana
Wild Life and Fisheries Commission
Department of Public Works

February 1976

ERRATA SHEET

The locations of the two structures for water control (weirs) as shown on the Project Map, Page I-14 and Appendix B, are in error. This map corrects the planned locations of these two structures to be installed in Channel L-6.



PART I

WATERSHED PLAN

FOR

WATERSHED PROTECTION,
FLOOD PREVENTION, AND DRAINAGE

CHOCTAW BAYOU WATERSHED

West Baton Rouge, Pointe Coupee,
and Iberville Parishes, Louisiana

PART I - WATERSHED PLAN

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WATERSHED PLAN AGREEMENT

between the

UPPER DELTA SOIL AND WATER CONSERVATION DISTRICT
Local Organization

WEST BATON ROUGE PARISH POLICE JURY
Local Organization

POINTE COUPEE PARISH POLICE JURY
Local Organization

(hereinafter referred to as the Sponsoring Local Organization)

State of Louisiana

and the

Soil Conservation Service
United States Department of Agriculture
(hereinafter referred to as the Service)

Whereas, application has heretofore been made to the Secretary of Agriculture by the Sponsoring Local Organization for assistance in preparing a plan for works of improvement for the Choctaw Bayou Watershed, State of Louisiana, under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress; 68 Stat. 666) as amended; and

Whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the Service; and

Whereas, there has been developed through the cooperative efforts of the Sponsoring Local Organization and the Service a mutually satisfactory plan for works of improvement for the Choctaw Bayou Watershed, State of Louisiana, hereinafter referred to as the watershed plan, which plan is annexed to and made a part of this agreement;

Now, therefore, in view of the foregoing considerations, the Sponsoring Local Organization and the Secretary of Agriculture, through the Service, hereby agree on the watershed plan, and further agree that the works as set forth in said plan can be installed in about 10 years.

It is mutually agreed that in installing and operating and maintaining the works substantially in accordance with the terms, conditions, and stipulations provided for in the watershed plan:

1. The Sponsoring Local Organization will acquire, with other than Public Law 566 funds, such land rights as will be needed in connection with the planned works (estimated cost - $817,900).

2. The Sponsoring Local Organization assures that comparable replacement dwellings will be available for individuals and persons displaced fron dwellings, and will provide relocation assistance advisory services and relocation assistance, make the relocation payments to displaced persons, and otherwise comply with the real property acquisition policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894) effective as of January 2, 1971, and the regulations issued by the Secretary of Agriculture pursuant thereto. The costs of relocation payments will be shared by the Sponsoring Local Organization and the Service as follows:

	Sponsoring Local Organization (percent)	Service (percent)	Estimated Relocation Payment Costs (dollars)
Relocation Payment	73	27	0

a/ Investigation has disclosed that under present conditions the project measures will not result in the displacement of any person, business, or farm operation. However, if relocations become necessary, relocation payments will be cost-shared in accordance with the percentages shown.

3. The Sponsoring Local Organization will acquire or provide assurance that landowners or water users have acquired such water rights pursuant to State law as may be needed in the installation and operations of the planned works.

4. The percentages of construction costs of structural measures to be paid by the Sponsoring Local Organization and by the Service are as follows:

Works of Improvement	Sponsoring Local Organization	Service	Estimated Construction Cost
	(percent)	(percent)	(dollars)
Channel Work	25	75	1,136,200

5. The percentages of the engineering costs to be borne by the Sponsoring Local Organization and by the Service are as follows:

Works of Improvement	Sponsoring Local Organization	Service	Estimated Construction Cost
	(percent)	(percent)	(dollars)
Channel Work	0	100	79,500

6. The Sponsoring Local Organization and the Service will each bear the costs of Project Administration which it incurs, estimated to be $12,380 and $225,220, respectively.

7. The Upper Delta Soil and Water Conservation District will provide assistance to land users to assure the installation of the land treatment measures shown in the watershed plan.

8. The Upper Delta Soil and Water Conservation District will encourage land users to install and maintain the land treatment measures for the protection and improvement of the watershed.

9. The Sponsoring Local Organization will be responsible for the operation and maintenance of the structural measures by actually performing the work or arranging for such work in accordance with agreements to be entered into prior to issuing invitations to bid for construction work.

10. The costs shown in this agreement represent preliminary estimates. In finally determining the costs to be borne by the parties hereto, the actual costs incurred in the installation of structural measures will be used.

11. This agreement is not a fund-obligating document. Financial and other assistance to be furnished by the Service in carrying out the watershed plan is contingent on the appropriation of funds for this purpose.

A separate agreement will be entered into between the Service and the Sponsoring Local Organization before either party initiates work involving funds of the other party. Such agreement will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works.

12. The watershed plan may be amended or revised, and this agreement may be modified or terminated only by mutual agreement of the parties hereto except for cause. The Service may terminate financial and other assistance in whole, or in part, at any time whenever it is determined that the Sponsoring Local Organization has failed to comply with the conditions of this agreement. The Service shall promptly notify the Sponsoring Local Organization in writing of the determination and the reasons for the termination, together with the effective date. Payments made to the Sponsoring Local Organization or recoveries by the Service under projects terminated for cause shall be in accord with the legal rights and liabilities of the parties. An amendment to incorporate changes affecting one specific structural measure may be made by mutual agreement between the Service and the Sponsor having specific responsibilities for the particular structural measure involved.

13. No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

14. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Acts of 1964, and the regulations of the Secretary of Agriculture (7 C.F.R.15.1-15.12), which provide that no person in the United States shall, on the ground of race, color, or national origin, be denied the benefits of, or be subjected to discrimination under any activity receiving Federal financial assistance.

15. This agreement will not become effective until the Service has issued a notification of approval and authorizes assistance.

AGREEMENT

UPPER DELTA SOIL AND WATER CONSERVATION DISTRICT
Local Organization

By Richard L. Gibson

Title Chairman

Post Office Box A
New Roads, Louisiana 70760
Address Zip Code

Date March 16 1976

The signing of this agreement was authorized by a resolution of the governing body of the Upper Delta Soil and Water Conservation District
Local Organization
adopted at a meeting held on March 16, 1976

Secretary, Local Organization

Post Office Box A
New Roads, Louisiana 70760
Address Zip Code

Date March 16, 1976

WEST BATON ROUGE PARISH POLICE JURY
Local Organization

By Robert Bourgeois

Title President

Post Office Box 496
Port Allen, Louisiana 70767
Address Zip Code

Date March 12, 1976

The signing of this agreement was authorized by a resolution of the governing body of the West Baton Rouge Parish Police Jury
Local Organization
adopted at a meeting held on March 11, 1976

Secretary, Local Organization

Post Office Box 496
Port Allen, Louisiana 70767
Address Zip Code

Date March 12, 1976

AGREEMENT

POINTE COUPEE PARISH By Adam J. Martin

POLICE JURY
Local Organization

Post Office Box J Title President

New Roads, Louisiana 70760
Address Zip Code Date March 9, 1976

The signing of this agreement was authorized by a resolution of the governing body of the Pointe Coupee Parish Police Jury
Local Organization

adopted at a meeting held on March 9, 1976

Hazel L. Laurens
Secretary, Local Organization

Post Office Box J
New Roads, Louisiana 70760
Address Zip Code

Date March 9, 1976

Appropriate and careful consideration has been given to the environmental impact statement prepared for this project and to the environmental aspects thereof.

Soil Conservation Service

United States Department of Agriculture

Approved by:

Alton Marguess
State Conservationist

Date 3-25-76

WATERSHED PLAN

CHOCTAW BAYOU WATERSHED

WEST BATON ROUGE, POINTE COUPEE,
AND IBERVILLE PARISHES, LOUISIANA

February 1976

Summary

This watershed comprises 110,000 acres in parts of Pointe Coupee, West Baton Rouge, and Iberville Parishes.

This plan consists of land treatment and structural measures to provide flood protection and improve drainage in the Choctaw Bayou Watershed.

The Sponsoring Local Organization is the Upper Delta Soil and Water Conservation District, the West Baton Rouge Parish Police Jury, and the Pointe Coupee Parish Police Jury.

The land treatment program will consist of measures necessary to adequately treat 53,100 acres. This includes 31,900 acres of cropland and pasureland and 21,200 acres of forest land.

The Upper Delta Soil and Water Conservation District will provide the overall leadership necessary for the application of the total land treatment program. The Forest Service, in cooperation with and through the Louisiana Forestry Commission, will provide technical assistance for measures on forest land. Adequate fire protection is being provided under going cooperative programs by the Louisiana Forestry Commission.

Structural measures will consist of 92 miles of channel work with appurtenant structures. The work will include 64 miles of excavation on existing channels, 6 miles of excavation of new channels, and 22 miles of clearing only.

All channels have been designed to meet the criteria for stability in SCS Technical Release 25, taking into account allowable flow velocities in view of soil materials present.

The watershed plan proposes an installation period of 5 years for the structural measures and 10 years for land treatment. The total installation cost is estimated to be $5,609,500, of which Public Law 566 funds will bear $1,542,370 (about 27 percent), and Other funds will bear $4,067,130 (about 73 percent). Land treatment measures will cost approximately $3,338,300 and the structural measures will cost about $2,271,200.

Land users will maintain the land treatment measures on their farms. The Pointe Coupee Parish and the West Baton Rouge Parish Police Juries will operate and maintain the structural measures in their respective parishes. The estimated annual operation and maintenance cost of structural measures is $43,500.

Average annual benefits of the project include $451,000 from flood damage reduction, $91,100 from more intensive land use, $410,000 from improved drainage, $9,500 from redevelopment, and $137,700 from secondary effects.

Total average annual benefits amount to $1,099,300. Total average annual costs, including amortization of installation cost plus operation and maintenance, are $185,100. The ratio of benefits to costs is 5.9 to 1.

INTRODUCTION

This plan has been reduced in content and briefed to avoid excessive duplication with information required in the Environmental Impact Statement. The Environmental Impact Statement, Part II, of this document should be reviewed for additional information on the environmental setting, watershed problems, impacts of the project, alternatives considered, and consultation and review with appropriate agencies and others.

PLANNED MEASURES

Land Treatment

The land treatment program will consist of measures necessary to adequately treat 67,100 acres. Major land treatment measures to be installed under the soil and water conservation district program on 31,900 acres of cropland and pastureland include conservation cropping systems, crop residue management, minimum tillage, bedding, drainage land grading, land smoothing, structures for water control (pipe drops), drainage field ditches, drainage mains and laterals, pasture and hayland planting, and pasture and hayland management. Conservation plans will be prepared and some land treatment (not enough for the land to be adequately treated) begun on the remaining acres of cropland and pastureland. In addition, 400 acres will be planted to provide wildlife food and cover.

Plantings of suitable species such as Japanese or browntop millet, lespedeza, ryegrass, clover, corn, wheat, and others are planned for 1/2- to 5-acre plots at various locations in the watershed. Locations and development of these wildlife plantings will be made by individual land users with technical assistance provided by the Soil Conservation Service. These plant species will provide food and habitat for waterfowl, quail, dove, deer, turkey, rabbit, and other nongame wildlife.

The improved multiple use management program will adequately treat 21,200 acres of forest land. This program includes 21,200 acres of wildlife habitat creation, retention, and management; 1,200 acres of which are wetland wildlife habitat; 5,000 acres of improvement cutting; and 9,000 acres of release of desirable species. These measures will be installed by the Upper Delta Soil and Water Conservation District with assistance from the Soil Conservation Service, and the Louisiana Forestry Commission in cooperation with the U.S. Forest Service.

The proposed forestry measures under the U.S. Forest Service program includes 5,000 acres of improvement cutting and 9,000 acres release of desirable species. Formulation of management plans will be accomplished on 10,000 acres. The going Cooperative Forest Fire Control Program will provide adequate protection for the 45,600 acres of forest land in the watershed.

Detailed soil surveys will be made on the 95,800 acres that have not been surveyed to assist in development of soil and water conservation plans.

Structural Measures

Planned structural measures consist of 92 miles of channel work with appurtenant structures for water control (pipe drops), two structures for water control (weirs), one structure for water control (stop log weir), and one grade stabilization structure. The channel work includes 70 miles of excavation and 22 miles of clearing. Approximately 6 miles of new channels will be excavated. An additional 12 miles of project channels are adequate, but will be maintained in order to provide adequate outlets for other project channels. See the Project Map, page I-15, for locations of project channels and weirs.

All channel slopes and berms will be seeded immediately after construction. Spoil on open land will be spread unless otherwise specified by the Sponsor. Spoil that will not be spread or that cannot be spread within 90 days will be stacked, shaped, and seeded (see figure 1). Hardwood seedlings will be planted on about 82 acres of project-created spoil in forested areas.

The two temporary structures for water control (weirs) (figure 7) will be installed in Channel L-6 (Bayou Tommy); the structure for water control (stop log weir) (figure 3) will be installed in Channel L-3 (Tiger Bayou); the grade stabilization structure (figure 4) will be installed in Channel L-9. Structures for water control (pipe drops) (figure 2) will be installed at side inlets of project channels. The exact location of these structures will be determined during the construction phase of the project.

Alteration, modification, or reconstruction of 86 bridges and culverts, and approximately 20 pipeline crossings are necessary to insure proper functioning of the planned structural measures.

Special design and construction measures that will be used to minimize effects on the plant, animal, and aquatic resources are:

1. Excavation in forest land will be limited to the side with the poorer quality habitat. Consideration will be given to providing as much shade as possible for ponded water.

2. The enlargement of Channel L-6 from the point of diversion upstream to near the Texas and Pacific Railroad will be performed differently from other channel work. This work will be done in such a manner that one side of the channel and the existing bottom will not be disturbed except at the weir location and road and pipeline crossings. Refer to the drawing on page I-13 for an illustration of this specific measure.

3. Excavation in forest will be minimized and spoil placed so as to avoid tree mortality.

4. Selected trees will be left in rights-of-way.

5. Construction-disturbed areas will be revegetated and planted to seedlings beneficial to wildlife species.

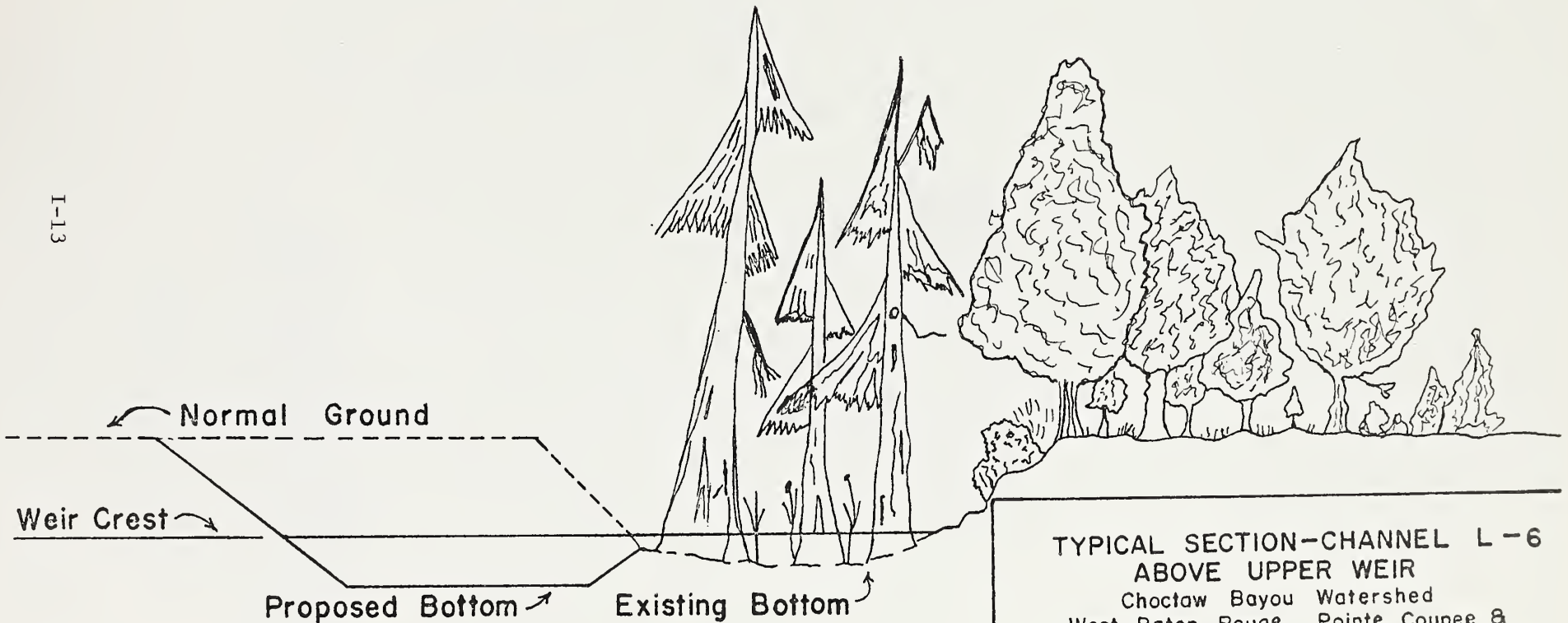
6. A special structure for water control (stop log weir) will be installed in Channel L-3, the outlet for Lake Clause.

7. Structures for water control (weirs) will be installed prior to any upstream work on Channel L-6 (Bayou Tommy). The planned crest elevations of the upper weir is such that shallow water will be maintained in the undisturbed bottom of the bayou.

8. The planned crest elevation of the lower weir in channel L-6 is such that all low flows will continue through the undisturbed portion of Bayou Tommy downstream from the point of diversion.

The total area of rights-of-way required for project channels is 1,072 acres. The area of existing rights-of-way is 670 acres. Figures 5 and 6 show typical plan views and cross sections of channels where woody vegetation or forest exists.

The watershed plan proposes an installation period of 5 years for structural measures.



TYPICAL SECTION–CHANNEL L–6
ABOVE UPPER WEIR
Choctaw Bayou Watershed
West Baton Rouge, Pointe Coupee &
Iberville Parishes, Louisiana
U.S. Department of Agriculture
SOIL CONSERVATION SERVICE
Alexandria, Louisiana

U S DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE, ALEXANDRIA, LOUISIANA


R11E
R10E
R9E
R12E
T5S
T6S
T7S
T8S
FALSE RIVER
MISSISSIPPI RIVER
WEST BATON ROUGE PARISH
IBERVILLE PARISH
POINTE COUPEE PARISH
WEST BATON ROUGE PARISH
EAST BATON ROUGE PARISH
MORGAN CITY - PORT ALLEN ROUTE
INTRACOASTAL WATERWAY
Port Allen
Lettsworth
Erwinville
Grosse Tete
Choctaw Bayou
Grosse Tete Bayou
Bayou Fordoche
Bayou Jacko
Bayou Grosse Tete
Bayou Choctaw
Bayou Fordoche
Bayou Jacko
Bayou Grosse Tete
Choctaw Bayou
Fordoche Bayou
Jacko Bayou
Grosse Tete Bayou

INSTALLATION COSTS - MONETARY

The total installation cost of the project is estimated to be $5,609,500, of which $1,542,370 will be borne by Public Law 566 funds, and $4,067,130 by Other funds (see table 1). Included in the total project cost is $3,338,300 for land treatment measures, and $2,271,200 for structural measures.

Land Treatment Measures

The installation of land treatment measures will insure the timely realization of project benefits and will provide proper treatment of the land for protection and improvement. This plan provides for installation of these measures within a 10-year project installation period. Installation costs of $2,856,400 for treating cropland, pastureland, and forest land will be borne by individual land users. This amount includes $44,800 to develop multiple use of open land and forest land through upland and wetland wildlife habitat management. Of this amount, $20,000 would be applied to upland wildlife habitat improvement and development in association with open land, $20,000 would be applied to upland wildlife habitat improvement on forest land, and $4,800 would be in association with wetland wildlife habitat improvement on forest land. The installation cost also includes $231,500 for release and stand improvement under the going cooperative forest program for improvement of wildlife habitat.

The cost of technical assistance for the going and accelerated program to install land treatment measures is estimated to be $481,900 during the 10-year installation period. Of this amount, $385,500 will be provided by Public Law 566 funds for an accelerated program. The remaining $96,400 will be furnished by Other funds, including a going program input of $77,800 provided through the Soil and Water Conservation District Program, $12,000 provided through the Cooperative Forest Management Program, and $6,600 provided by the Louisiana Forestry Commission as accelerated technical assistance.

Structural Measures

All structural measures are multiple purpose, serving both flood prevention and drainage. The $2,033,600 structural measures cost, exclusive of project administration, was allocated 50 percent to flood prevention and 50 percent to drainage.

The total cost of installation of channel work is $2,271,200, of which $1,136,200 is for construction, $79,500 is for engineering services, $817,900 is for land rights, and $237,600 is for project administration. Breakdowns of these costs between those borne by Public Law 566 and those borne by Other funds are shown in table 1 for the project as a whole, and in table 2 for channel work by evaluation units. Allocation of structural measure installation costs by purpose and sharing of these costs between Public Law 566 and Other funds are shown in table 2A. Table 2A does not include project administration costs.

The costs of measures were estimated using current prices of work of comparable size and complexity and adjusted to local conditions. This was further modified by adding a construction contingency of 20 percent to provide a reasonable margin to cover unexpected costs.

The construction cost of $1,136,200 consists of $878,800 for excavation and clearing, $112,800 for structures for water control (weirs), $20,300 for structures for water control (pipe drops), $118,800 for establishing vegetation, and $5,500 for a grade stabilization structure. The Public Law 566 share of the construction cost for flood prevention will be 100 percent. The construction cost for drainage will be shared equally between Public Law 566 and the Sponsors.

The land rights cost consists of $118,100 for the value of land, surveys, and legal fees; $176,000 for modification or replacement of parish and private bridges; $34,000 for State and Federal culverts; $88,500 for parish and private culverts; and $401,300 for alterations, modifications, or reconstruction of existing miscellaneous facilities such as pipelines and utilities. No additional land rights are necessary for the installation of appurtenant structures which will be installed in the channel rights-of-way. The Sponsors will pay the land rights cost.

The cost of all engineering services, $79,500, is the direct costs of surveys, investigations, designs, and preparation of plans and specifications, including vegetative requirements to be done in relation to structural measure installation. The cost of these services will be paid by Public Law 566 funds.

The Service and the Sponsoring Local Organization will be responsible for the total cost of items of project administration that each incurs. These costs (estimated to be $237,600) are the administrative costs associated with the installation of structural measures. The Sponsors will bear costs of $11,360 for administration of contracts and $1,020 for such inspections necessary to assure themselves the work is being done according to their interest. The Service will bear the cost of $225,220 for Government representatives

inspections necessary to protect the interest of the Federal Government, and other project administration services it provides.

Public Law 566 funds will bear approximately $1,156,870 (about 50 percent) of the total cost and Other funds will bear approximately $1,114,330 (about 50 percent).

The Sponsors assure that comparable replacement dwellings will be available should any unforeseen displacement of individuals and persons occurs as a result of installation of structural measures. The Sponsors will provide without Public Law 566 financial help relocation assistance advisory services and relocation assistance, make the relocation payments to displaced persons, and otherwise comply with the real property acquisition policies. The costs of relocation payments will be shared by Public Law 566 and the Sponsors, based on the ratio of Public Law 566 and Other funds to the Total Project Cost on table 1, excluding relocation payment cost. The relocation payment will be shared 27 percent by Public Law 566 and 73 percent by the Sponsors.

A schedule of obligations for the 10-year installation period, including both land treatment and structural measures, is shown on page I-20 .

SCHEDULE OF OBLIGATIONS
(Dollars)[1/]

Year	Measures	PL-566 Funds	Other Funds	Total Funds
1st	Construction	246,525	82,175	328,700
	Engineering Services	40,700	-	40,700
	Land Rights	-	333,800	333,800
	Project Administration	45,550	2,450	48,000
	Land Treatment	-	267,140	267,140
	Soil Surveys	11,100	500	11,600
	Technical Assistance	28,200	9,360	37,560
2nd	Construction	188,700	62,900	251,600
	Engineering Services	20,800	-	20,800
	Land Rights	-	247,500	247,500
	Project Administration	54,400	3,000	57,400
	Land Treatment	-	271,140	224,660
	Soil Surveys	11,100	500	11,600
	Technical Assistance	29,900	9,360	39,260
3rd	Construction	223,650	74,550	298,200
	Engineering Services	18,000	-	18,000
	Land Rights	-	159,200	159,200
	Project Administration	56,970	3,130	60,100
	Land Treatment	-	285,040	285,040
	Soil Surveys	11,100	500	11,600
	Technical Assistance	33,100	9,360	42,460
4th	Construction	193,275	64,425	257,700
	Land Rights	-	77,400	77,400
	Project Administration	52,470	2,930	55,400
	Land Treatment	-	286,040	286,040
	Soil Surveys	11,100	500	11,600
	Technical Assistance	33,300	9,460	42,760
5th	Project Administration	15,830	870	16,700
	Land Treatment	-	286,040	286,040
	Soil Surveys	11,100	500	11,600
	Technical Assistance	33,200	9,460	42,660
6th	Land Treatment	-	286,040	286,040
	Technical Assistance	33,000	9,460	42,460
7th	Land Treatment	-	286,040	286,040
	Technical Assistance	32,900	9,360	42,260
8th	Land Treatment	-	286,040	286,040
	Technical Assistance	32,900	9,360	42,260
9th	Land Treatment	-	300,040	300,040
	Technical Assistance	36,100	9,360	45,460
10th	Land Treatment	-	302,840	302,840
	Technical Assistance	37,400	9,360	46,760
Total		1,542,370	4,067,130	5,609,500

1/ Price Base - 1975

February 1976

BENEFITS - MONETARY

Total average annual monetary benefits of this project are estimated to be $1,099,300 (table 6). Benefits from flood damage reduction to crops and pasture are estimated to be $451,000. This includes a reduction of $41,000 of indirect losses attributed to flooding.

Benefits to crops and pasture from increased net returns as a result of improved drainage measures contained in the project are estimated to be $410,000. Benefits from more intensive use of the land as a result of the project will be about $91,100.

Employment benefits will be approximately $9,500. These are benefits resulting from the project's utilization of local unemployed and underemployed labor. It represents wages paid to local labor for both the installation and operation and maintenance of the project.

External economies representing economic values over and above the monetary effects of the project as a result of activities induced by or stemming from the project are estimated to be $137,700. External economies from a national viewpoint will accrue to this project, but were not evaluated. Other benefits will accrue in the watershed, but no attempt was made to attach monetary values to them.

COMPARISON OF BENEFITS AND COSTS

Average annual project benefits from structural measures are estimated to be $1,099,300. The average annual cost of structural measures (amortized installation cost plus operation and maintenance), is estimated to be $185,100, providing a benefit-cost ratio of 5.9 to 1. Total average annual benefits, excluding external economies are estimated to be $961,600, providing a benefit-cost ratio of 5.2 to 1.

INSTALLATION PROVISIONS

This project is to be carried out over a 10-year period for land treatment measures and a 5-year period for structural measures. The Sponsoring Local Organization understands its obligations and has agreed to carry out the work during this period.

The Upper Delta Soil and Water Conservation District with technical assistance from the Soil Conservation Service will provide the overall leadership necessary for the application of the land treatment measures. Land users will be encouraged to apply and maintain all needed measures on their land. Plans for installation and maintenance of these measures will be outlined with each land user. The agreed-to items will be identified in a conservation plan which will be executed between the individual and the soil and water conservation district. A study of completed projects with purposes similar to this plan shows that land treatment planned during the project installation period can be accomplished.

The Forest Service, in cooperation with the Louisiana Forestry Commission, will provide technical assistance under an accelerated program and the going cooperative forest management program for installation of land treatment on forest lands. Adequate fire protection will continue to be is provided through the Louisiana Forestry Commission.

The West Baton Rouge and the Pointe Coupee Parish Police Juries will assume the local responsibilities in carrying out the planned structural measures. It is planned that construction will proceed in the order of priorities designated by the Sponsors. Priority area No. 1 is Channel L-3, its tributaries that are project channels, and the weir in Channel L-3. Priority Area No. 2 is Channels L-4 and L-5, their tributaries that are project channels, and the two weirs in Channel L-6 (Bayou Tommy). Priority Area No. 3 is Channel L-6 and its tributaries that are project channels. Priority Area No. 4 is Channels L-2, L-7, L-9, L-10, and L-11, and their tributaries that are project channels. These juries will be responsible for the local share of the cost of construction; acquiring necessary land rights; obtaining modification to all roads, bridges, culverts, pipelines, fences, utilities, and other existing items which are needed; and advertising, awarding, and administering contracts. These juries have the power of expropriation and have agreed to use these powers as necessary to obtain needed land rights.

Land easements and rights-of-way will be acquired by using Louisiana Revised Statute 38:113, signing of flowage easements, and when necessary, by fee simple title. Appraisals necessary for purchasing easements will be acquired through reputable land

and property appraising institutions. Construction permits are required by the U.S. Army Corps of Engineers (Engineering Regulation No. 1165-2-302) for channel work to be done. These permits and any others which may become necessary for installation of structural measures will be obtained by the Sponsoring Local Organization prior to the installation of any structural measures.

Care will be exercised to insure the timely modification or reconstruction of bridges, culverts, pipelines, or other existing facilities in order that they will not be a deterrent to the proper functioning of the structural measure and will allow their orderly installation.

The Soil Conservation Service will enter into an agreement with the Sponsors providing for payment of engineering services. These engineering services will be provided by the Louisiana State Department of Public Works. They will make the detailed surveys, designs, and cost estimates, prepare plans and specifications, make inspections, and prepare certificates of completion. A project agreement will be entered into between the Soil Conservation Service and the Sponsoring Local Organization before any contracts are awarded for the installation of structural measures.

OPERATION AND MAINTENANCE PROVISIONS

Operation and maintenance of all phases of the completed project will be the responsibility of non-Federal groups, agencies, and individuals.

Individual land users will have the responsibility for maintaining land treatment measures. The Soil Conservation Service, through the Upper Delta Soil and Water Conservation District program, will provide technical assistance to land users for the maintenance of these measures. The Louisiana Forestry Commission, in cooperation with the Forest Service, will provide technical assistance necessary for maintaining land treatment measures on forest land under the going Cooperative Forest Management Program. The objective is to maintain adequate drainage, vegetative cover, or other conservation practices on the land in order to realize the benefits from the project.

Operation and maintenance of all phases of the completed structural measures will be the responsibility of the West Baton Rouge and the Pointe Coupee Parish Police Juries. In addition to the 92 miles of channels to be worked, the jury will continue to maintain the system of channels that is now adequate. The methodical operation and maintenance of these channels and related structures will insure proper functioning of these measures and realization of benefits. The estimated annual maintenance cost of structural measures is $43,500.

The present maintenance tax for drainage is considered adequate for maintaining channels and appurtenant structures. Should these funds prove inadequate, the Sponsors have agreed to provide additional financing by an increase in revenue through normal taxing procedure.

Channel maintenance includes periodic cleanouts necessary to restore channels to their planned capacities, repair of bank erosion, control of vegetation, and repair or replacement of appurtenant structures. Maintenance of structures for water control and grade stabilization structures includes repairing rills around headwalls or wingwalls, replacing rock riprap as needed, maintaining or replacing vegetation on fills, repairing or replacing work or broken parts, replacing short-life parts, and all other activities essential to the functioning of the structures.

Existing public roads, farm roads, turn rows, trails, open areas, and other existing facilities will be used for maintenance equipment to reach the channels. Sufficient access will be available to properly maintain all channels. The channels will be kept clear

of excessive vegetation by mowing, hand labor, and use of approved herbicides. These herbicides will be used in areas where mowing and hand labor are not practical. Spraying will be accomplished in the summer months when the ephemeral channels and the intermittent channels are most likely to have the least flow. Eroded banks, side inlets, and other appurtenances will be repaired when in need. Localized sediment accumulations in channels will be removed periodically by mechanical means.

Vegetation remaining on channel banks not disturbed during construction will be maintained. Trees within channel rights-of-way will not be destroyed by maintenance methods. Approximately two complete mechanical cleanouts are anticipated during the life of the project and the volume of material to be removed each time will require no additional rights-of-way.

Provisions will be made for representatives of the Soil Conservation Service, the Louisiana Department of Public Works, and the Sponsors to have free access to all portions of the project measures at any reasonable time for the purpose of inspection, repair, and maintenance. The Sponsors, together with representatives of the Soil Conservation Service, will make a joint inspection annually, and after the occurrence of any unusual event that might adversely affect the structural measures.

These joint inspections will continue for 3 years following installation of the structural measures. Inspections after the third year will be made by the Sponsors. They will prepare an annual report and send a copy to the Soil Conservation Service. Items of inspection will include, but will not be limited to, (1) conditions of vegetative cover and growth, (2) need for removal of sediment bars and debris accumulations, (3) brush control in channels, (4) structures for water control (pipe drops and weirs), and (5) general conditions.

The Sponsoring Local Organization fully understands its obligation for operation and maintenance and will execute a specific operation and maintenance agreement with the Soil Conservation Service prior to the execution of the project agreement for the installation of project measures. The operation and maintenance agreement will include specific provisions for retention and disposal of property acquired or improved with Public Law 566 financial assistance.

The method in which operation and maintenance is to be accomplished will be in accordance with procedures outlined in the Soil Conservation Service's Louisiana Watershed Operation and Maintenance Handbook.

FINANCING PROJECT

Federal assistance will be provided under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress; Stat. 666) as amended. This assistance is subject to appropriation of funds.

The cost of applying land treatment measures will be borne by the land users. Technical assistance to the land users will be provided by the Soil Conservation Service and the U.S. Forest Service, cooperating with the Louisiana Forestry Commission. Funds for the acceleration of technical assistance necessary to insure timely installation of land treatment measures and for soil surveys will be provided by Public Law 566. The Agricultural Stabilization and Conservation Service administers programs that provide financial assistance in the installation of some land treatment measures.

The Louisiana Department of Public Works has agreed to provide funds for the local share of cost of structural measures contingent on the appropriation of monies for this purpose by the Louisiana Legislature. The Sponsors recognize that these funds may not be available or that additional funds may be required. They will be responsible for obtaining additional financing as necessary through normal funding procedures such as taxes or bond issues.

"Prior to entering into agreements that obligate funds of the Service, the West Baton Rouge and Pointe Coupee Parish Police Juries will have a financial management system for control, accountability, and disclosure of Public Law 566 funds received, and for control and accountability for property and other assets purchased with Public Law 566 funds.

Program income earned during the grant period will be reported on the Sponsor's request for advance or reimbursement from the Service."

TABLE 1 - ESTIMATED PROJECT INSTALLATION COST

Choctaw Bayou Watershed, Louisiana

Installation Cost Item	Unit	Non-Federal Land	Estimated Cost (Dollars)[1] P.L. 566 Funds SCS[3]	P.L. 566 Funds FS[3]	P.L. 566 Funds Total	Other SCS[3]	Other FS[3]	Other Total	Total
Land Treatment									
Land Areas									
Cropland		22,200	-	-	-	1,361,300	-	1,361,300	1,361,300
Pastureland	Acres	9,700	-	-	-	1,238,800	-	1,238,800	1,238,800
Forest Land	to be	21,200[5]	-	-	-	24,800	231,500	256,300	256,300
Technical Assistance	treated[2]		359,100	26,400	385,500	77,800	18,600[6]	96,400	481,900
Total Land Treatment			359,100	26,400	385,500	2,702,700	250,100	2,952,800	3,338,300
Structural Measures									
Construction									
Channel Work[4]									
N	Miles	9	167,325	-	167,325	55,775	-	55,775	223,100
M	Miles	89	587,025	-	587,025	195,675	-	195,675	782,700
O	Miles	6	97,800	-	97,800	32,600	-	32,600	130,400
Subtotal-Construction			852,150	-	852,150	284,050	-	284,050	1,136,200
Engineering Services			79,500	-	79,500	-	-	-	79,500
Relocation Payments			-	-	-	-	-	-	-
Project Administration									
Construction Inspection			113,800	-	113,800	-	-	-	113,800
Other			111,420	-	111,420	12,380	-	12,380	123,800
Relocation Assistance									
Advisory Services			-	-	-	-	-	-	-
Subtotal-Administration			225,220	-	225,220	12,380	-	12,380	237,600
Other Costs									
Land Rights			-	-		817,900	-	817,900	817,900
Subtotal-Other			-	-		817,900	-	817,900	817,900
Total Structural Measures			1,156,870	-	1,156,870	1,114,330	-	1,114,330	2,271,200
TOTAL PROJECT			1,515,970	26,400	1,542,370	3,817,030	250,100	4,067,130	5,609,500

1/ Price base 1975.
2/ Includes only areas estimated to be adequately treated during the project installation period. Treatment will be accelerated throughout the watershed, and dollar amounts apply to total land areas, not just to adequately treated areas.
3/ Federal agency responsible for assisting in installation of works of improvement.
4/ Type of channel before project: (N) - an unmodified, well-defined natural channel or stream; (M) - manmade ditch or previously modified channel; and (0) - none or practically no defined channel.
5/ Includes 21,200 acres of multiple-use wildlife habitat development and 14,000 acres forestry measures.
6/ Includes $12,000 for going Cooperative Forest Management Program.

TABLE 1A - STATUS OF WATERSHED WORKS OF IMPROVEMENT

Choctaw Bayou Watershed, Louisiana
Pointe Coupee, Iberville and West Baton Rouge Parishes
Louisiana

Land Treatment Measures	Unit	Applied To Date	Total Cost 1/
			--dollars--
Bedding	Acres	958	43,100
Chiseling and Subsoiling	Acres	500	4,500
Conservation Cropping System	Acres	4,248	29,700
Crop Residue Management	Acres	4,248	10,600
Drainage Land Grading	Acres	2,226	222,600
Land Smoothing	Acres	703	28,100
Drainage Mains and Laterals	Feet	309,487	108,300
Pasture and Hayland Management	Acres	1,200	36,000
Pasture and Hayland Planting	Acres	1,200	96,000
Structures for Water Control	Number	84	12,600
Drainage Field Ditches	Feet	135,917	16,300
Wildlife Wetland Habitat Management	Acres	65	300
Wildlife Upland Habitat Management 2/	Acres	5	--
Timber Stand Improvement	Acres	200	7,000
Forest Management Plans	Acres	1,200	600
Cooperative Fire Control Program	Acres	51,800	94,000
Total			709,700

1/ Price base 1975

2/ Wildlife habitat preservation

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TABLE 2 - ESTIMATED STRUCTURAL COST DISTRIBUTION

Choctaw Bayou Watershed, Louisiana

(Dollars)[1/]

Item	Installation Cost - P.L. 566 Funds			Installation Cost - Other Funds			Total Installation Cost[4/]
	Construction	Engineering	Total Public Law 566	Construction	Land Rights	Total Other	
CHANNEL WORK[2/]							
Evaluation Unit I							
(M)	60,300	5,600	65,900	20,100	43,500	63,600	129,500
Subtotal - Unit I	60,300	5,600	65,900	20,100	43,500	63,600	129,500
Evaluation Unit II							
(M)	243,150	22,700	265,850	81,050	301,200	382,250	648,100
(O)	3,375	300	3,675	1,125	400	1,525	5,200
Subtotal - Unit II	246,525	23,000	269,525	82,175	301,600	383,775	653,300
Evaluation Unit III							
(M)	128,925	12,100	141,025	42,975	254,500	297,475	438,500
Subtotal - Unit III	128,925	12,100	141,025	42,975	254,500	297,475	438,500
Evaluation Unit IV							
(M)	82,050	7,700	89,750	27,350	58,600	85,950	175,700
(O)	50,925	4,700	55,625	16,975	4,300	21,275	76,900
Subtotal	132,975	12,400	145,375	44,325	62,900	107,225	252,600
Evaluation Unit V							
(N)	167,325	15,600	182,925	55,775	57,700	113,475	296,400
(M)	72,600	6,800	79,400	24,200	96,100	120,300	199,700
(O)	43,500	4,000	47,500	14,500	1,600	16,100	63,600
Subtotal - Unit V	283,425	26,400	309,825	94,475	155,400	249,875	559,700
Project Administration	-	-	225,220	-	-	12,380	237,600
GRAND TOTAL	852,150	79,500	1,156,870	284,040	817,900[3/]	1,114,330	2,271,200

1/ Price base - 1975.

2/ Type of channel before the project: (N) - an unmodified, well-defined natural channel or stream; (M) - manmade ditch or previously modified channel; and (O) - none or practically no defined channel.

3/ Includes $118,100 for value of land, legal fees, and surveys; $299,500 for replacement or modification of bridges and culverts; and $401,300 for modification of pipelines, utility lines, and miscellaneous facilities.

4/ The cost of this work includes channel work (excavation and clearing), appurtenant grade stabilization structures, structures for water control and vegetative plantings.

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TABLE 2A - COST ALLOCATION AND COST SHARING SUMMARY

Choctaw Bayou Watershed, Louisiana

(Dollars)[1/]

Item	Cost Allocation			Cost Sharing					
	Purpose			Public Law 566			Other		
	Flood Prevention	Drainage	Total	Flood Prevention	Drainage	Total	Flood Prevention	Drainage	Total
Multiple Purpose Channel Work With Appurtenant Structures	1,016,800	1,016,800	2,033,600	607,850	323,800	931,650	408,950	693,000	1,101,950
TOTAL	1,016,800	1,016,800	2,033,600	607,850	323,800	931,650	408,950	693,000	1,101,950

1/ Price Base - 1975

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TABLE 3 - STRUCTURAL DATA
STRUCTURES FOR WATER CONTROL (WEIRS)
CHOCTAW BAYOU WATERSHED, LOUISIANA

Channel	Station 1/	Elevation of HG (ft. msl)	Height (ft)	Crest Elev. (ft. msl)	Depth (ft) 2/	Crest Width (ft)	Side Slope	Length (ft)
L-6	55+00	15.1	2.5	10.1	5.0	58	2:1	94
L-6	196+00	16.5	2.4	11.6	4.9	36	2:1	72

1/ Location of weirs are approximate. Final locations will be determined during construction stage.

2/ Difference between hydraulic gradient and crest elevations.

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TABLE 3A - STRUCTURAL DATA
STRUCTURES FOR WATER CONTROL
(STOP LOG WEIRS)
CHOCTAW BAYOU WATERSHED, LOUISIANA

Channel	Station	Elev. of H G (ft. msl)	Drainage Area (acre)	Design Flow (cfs)	Stop Log Crest Elev. (ft. msl)	Stop Log Length (ft)	Weir Crest Elev. (ft. msl)	Weir Crest Length (ft)	Side Slope	Length (ft)
L-3	310+00	21.0	4778	400	13.0	7.5	23.5	17.5	1.5:1	52

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TABLE 3B - STRUCTURE DATA

CHANNELS

Choctaw Bayou Watershed, Louisiana

Channel	Station	Drainage Area	Capacity Req'd	Capacity Des.	Water Surf-Elev.	Hydr. Grad.	Channel Dimensions Bottom Width	Bottom Grade	Flow Depth	Side Slope	"n" Value Aged	"n" Value As Built	Velocities Aged	Velocities As Built	Excavation	Inventory of Chan. Work Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
		sq mi	cfs	cfs		ft/ft	ft	%	ft				fps	fps	cu yd			
L-2	236+00	2.16	113	134	14.3	0.00060	A= 123.00		P= 33.00		0.080	0.080	1.08	1.08		VI	M	E
	183+80	2.84	126	135	11.2	0.00060	A= 132.00		P= 39.00		0.080	0.080	1.03	1.03		VI	M	E
	152+08	3.50	150	171	10.8	0.00012	12.0	0.01	6.6	1.5:1	0.035	0.025	1.18	1.65		II	M	E
	130+00	3.65	156	325	10.6	0.00012	A= 269.00		P= 64.00		0.035	0.035	1.21	1.21		IV	M	E
	112+72	5.10	206	207	10.4	0.00012	14.0	0.01	6.9	1.5:1	0.035	0.025	1.23	1.72		II	M	E
	95+00	8.92	353	379	10.1	0.00012	20.0	0.01	7.6	1.5:1	0.030	0.023	1.59	2.07	12000	II	M	S
	0+00	9.78	353	615	9.0	0.00012	A= 355.00		P= 62.00		0.030	0.030	1.73	1.73		IV	M	S
L-2A	23+90	1.19	61	119	12.7	0.00070	A= 108.00		P= 32.00		0.080	0.080	1.10	1.10		VI	M	E
	0+00	3.48	158	193	11.0	0.00070	A= 161.00		P= 43.00		0.080	0.080	1.19	1.19		VI	M	E
L-2A-1	166+00	0.21	14	15	19.6	0.00050	7.0	0.09	1.8	1.5:1	0.045	0.025	0.88	1.58		II	M	E
	56+00	1.59	78	86	14.1	0.00050	8.0	0.06	4.0	1.5:1	0.040	0.025	1.53	2.45		II	M	E
	15+00	2.10	96	96	13.3	0.00020	14.0	0.03	4.3	1.5:1	0.040	0.025	1.09	1.74	17100	II	M	E
	0+00	2.14	97	139	13.0	0.00020	A= 118.00		P= 35.00		0.040	0.040	1.18	1.18		IV	M	E
L-2D	126+80	0.17	12	30	21.4	0.00095	5.0	0.10	2.5	1.5:1	0.045	0.025	1.37	2.47		II	M	E
	86+00	0.43	26	30	17.5	0.00095	5.0	0.10	2.5	1.5:1	0.045	0.025	1.37	2.47		II	M	E
	47+00	0.67	38	39	15.2	0.00060	6.0	0.07	3.0	1.5:1	0.045	0.025	1.23	2.21	3900	II	M	E
	27+50	1.15	62	72	14.4	0.00040	A= 62.00		P= 27.00		0.045	0.045	1.16	1.16		IV	M	E
L-3	321+75	7.44	276	301	21.3	0.00036	14.0	0.00	6.3	1.5:1	0.035	0.025	2.04	2.86		II	M	I
	313+92	7.47	277	301	21.0	0.00036	14.0	0.00	6.3	1.5:1	0.035	0.025	2.04	2.86		II	M	I
	298+11	7.60	282	283	20.4	0.00036	21.0	0.00	5.5	1.5:1	0.040	0.025	1.76	2.82		II	M	I
	271+38	7.77	287	334	19.5	0.00036	21.0	0.01	5.6	1.5:1	0.035	0.025	2.03	2.84		II	M	I
	238+30	8.93	323	334	18.3	0.00036	21.0	0.04	5.6	1.5:1	0.035	0.025	2.03	2.84		II	M	I
	230+00	9.32	335	345	18.0	0.00036	21.0	0.04	5.7	1.5:1	0.035	0.025	2.05	2.87	33800	II	M	I
	159+00	10.42	368	415	15.5	0.00036	A= 198.00		P= 47.00		0.035	0.035	2.10	2.10		IV	M	I
	0+00	13.53	457	513	13.1	0.00015	A= 346.00		P= 72.00		0.035	0.035	1.48	1.48		IV	M	I
L-3A	347+03	0.00	0	22	25.9	0.00070	4.0	0.11	2.5	1.5:1	0.045	0.025	1.14	2.05		II	M	E
	319+00	0.93	50	51	23.9	0.00070	6.0	0.11	3.3	1.5:1	0.045	0.025	1.40	2.52		II	M	E
	291+46	1.55	77	82	22.0	0.00070	8.0	0.07	3.8	1.5:1	0.045	0.025	1.57	2.83		II	M	E
	266+20	2.43	111	115	21.1	0.00035	10.0	0.05	4.7	1.5:1	0.040	0.025	1.44	2.30	9200	II	M	E
	244+00	2.50	114	116	20.4	0.00035	A= 81.00		P= 27.00		0.040	0.040	1.43	1.43		IV	M	E
	216+63	4.16	174	201	19.4	0.00035	A= 120.00		P= 32.00		0.040	0.040	1.68	1.68		IV	M	E
	113+00	6.03	237	398	15.3	0.00040	A= 167.00		P= 35.00		0.035	0.035	2.39	2.39		IV	M	E
	65+00	9.13	333	518	14.3	0.00020	A= 252.00		P= 50.00		0.030	0.030	2.06	2.06		IV	M	E
	0+00	11.88	414	645	13.0	0.00020	A= 296.00		P= 54.00		0.030	0.030	2.18	2.18		IV	M	S
L-3A-1	103+79	0.65	37	64	18.7	0.00095	A= 40.00		P= 21.00		0.045	0.045	1.58	1.58		IV	M	E
	66+65	1.03	54	55	15.1	0.00095	A= 35.00		P= 18.00		0.045	0.045	1.58	1.58		IV	M	E
	60+00	1.09	57	146	14.5	0.00095	10.0	0.03	4.1	1.5:1	0.040	0.025	2.20	3.52		II	M	E
	39+30	1.34	66	66	14.2	0.00015	10.0	0.03	4.4	1.5:1	0.045	0.025	0.91	1.46	2000	II	M	E
	0+00	2.09	96	97	13.6	0.00015	A= 94.00		P= 28.00		0.040	0.040	1.03	1.03		IV	M	E
L-3A-1A	46+05	0.09	7	7	14.9	0.00015	4.0	0.05	2.1	1.5:1	0.045	0.025	0.48	0.86		II	M	E
	0+00	0.36	22	23	14.2	0.00015	6.0	0.05	3.3	1.5:1	0.045	0.025	0.65	1.17	5000	II	M	E
L-3A-3	43+00	0.11	9	26	17.4	0.00070	5.0	0.07	2.5	1.5:1	0.045	0.025	1.18	2.12		II	M	E
	15+00	0.37	23	26	15.5	0.00070	5.0	0.07	2.5	1.5:1	0.045	0.025	1.18	2.12		II	M	E
	0+00	0.78	42	47	15.3	0.00015	8.0	0.09	4.0	1.5:1	0.040	0.025	0.84	1.34	6600	II	M	E
L-3A-4	45+81	0.21	15	36	25.0	0.00140	5.0	0.15	2.5	1.5:1	0.045	0.025	1.66	2.99		II	M	E
	30+00	0.37	23	36	22.7	0.00140	5.0	0.15	2.5	1.5:1	0.045	0.025	1.66	2.99	800	II	M	E
	0+00	0.56	33	47	18.5	0.00140	A= 42.00		P= 20.00		0.080	0.080	1.14	1.14		VI	M	E
L-3A-5	50+66	0.00	0	19	21.0	0.00040	5.0	0.04	2.5	1.5:1	0.045	0.025	0.89	1.60		II	M	E
	15+00	0.18	13	19	19.6	0.00040	5.0	0.04	2.5	1.5:1	0.045	0.025	0.89	1.60	4400	II	M	E
	0+00	0.26	17	18	19.0	0.00040	A= 26.00		P= 16.00		0.060	0.060	0.69	0.69		VI	M	E
L-3A-6	48+00	0.10	8	38	27.9	0.00150	5.0	0.15	2.5	1.5:1	0.045	0.025	1.72	3.10		II	M	E
	15+05	0.46	28	38	23.0	0.00150	5.0	0.15	2.5	1.5:1	0.045	0.025	1.72	3.10		II	M	E
	0+00	0.55	32	35	21.0	0.00130	5.0	0.13	2.5	1.5:1	0.045	0.025	1.60	2.88	4500	II	M	E
L-3A-7	43+92	0.37	23	25	21.1	0.00015	7.0	0.04	3.2	1.5:1	0.045	0.025	0.65	1.17		II	M	E
	0+00	0.70	39	40	20.4	0.00015	8.0	0.04	3.9	1.5:1	0.045	0.025	0.74	1.33	6500	II	M	E
L-3B	72+00	0.13	10	19	19.1	0.00050	4.0	0.07	2.5	1.5:1	0.045	0.025	0.96	1.73		II	M	E
	2+95	0.77	43	43	15.7	0.00050	6.0	0.07	3.3	1.5:1	0.045	0.025	1.18	2.12		II	M	E
	0+00	1.03	55	56	15.5	0.00050	8.0	0.03	3.4	1.5:1	0.045	0.025	1.25	2.25	2900	II	M	E

1/ See Attached Coding System for Inventory of Channel Work

February 1976

(continued)
Table 3B - Structure Data Channels
Choctaw Bayou Watershed, Louisiana

Channel	Station	Drainage Area	Capacity Req'd	Capacity Des.	Water Surf-Elev.	Hydr. Grad.	Channel Dimensions: Bottom Width	Bottom Grade	Flow Depth	Side Slope	"n" Value: Aged	"n" Value: As Built	Velocities: Aged	Velocities: As Built	Excavation	Inventory of Chan. Work: Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
		sq mi	cfs	cfs		ft/ft	ft	%	ft				fps	fps	cu yd			
L-3B-1	25+00	0.09	7	21	17.2	0.00060	4.0	0.06	2.5	1.5:1	0.045	0.025	1.06	1.91		I	O	E
	0+00	0.27	17	21	15.7	0.00060	4.0	0.06	2.5	1.5:1	0.045	0.025	1.06	1.91	3800	I	O	E
L-3C	45+00	0.00	0	24	22.0	0.00080	4.0	0.08	2.5	1.5:1	0.045	0.025	1.22	2.20		II	M	E
	0+00	0.39	24	28	18.4	0.00080	4.0	0.08	2.5	1.5:1	0.045	0.025	1.26	2.27	3200	II	M	E
L-3D	85+00	0.00	0	26	24.0	0.00070	5.0	0.10	2.5	1.5:1	0.045	0.025	1.18	2.12		II	M	E
	43+00	0.33	21	26	21.0	0.00070	5.0	0.10	2.5	1.5:1	0.045	0.025	1.18	2.12		II	M	E
	0+00	0.97	52	52	19.5	0.00035	8.0	0.04	3.6	1.5:1	0.045	0.025	1.08	1.94	14700	II	M	E
L-3E	45+00	0.56	33	35	22.3	0.00045	7.0	0.06	2.9	1.5:1	0.045	0.025	1.07	1.93		II	M	E
	35+50	0.76	42	43	21.8	0.00045	7.0	0.06	3.2	1.5:1	0.045	0.025	1.13	2.03		II	M	E
	18+86	1.12	58	84	21.1	0.00045	A= 121.00		P= 37.00		0.100	0.100	0.69	0.69		VI	M	S
	16+90	1.16	59	62	21.0	0.00045	8.0	0.06	3.7	1.5:1	0.045	0.025	1.24	2.23	1600	I	O	E
L-3F	321+66	0.00	0	14	26.2	0.00017	6.0	0.03	2.5	1.5:1	0.045	0.025	0.59	1.06		II	M	E
	260+00	0.28	18	19	25.1	0.00017	6.0	0.03	2.9	1.5:1	0.045	0.025	0.64	1.15		II	M	E
	189+71	0.73	40	41	24.1	0.00015	9.0	0.03	3.8	1.5:1	0.045	0.025	0.74	1.33		II	M	E
	154+18	1.13	57	56	23.3	0.00022	9.0	0.02	3.9	1.5:1	0.045	0.025	0.97	1.75		II	M	E
	60+00	1.76	83	85	21.4	0.00020	12.0	0.03	4.3	1.5:1	0.040	0.025	1.07	1.71	26800	II	M	E
L-4	535+00	0.23	16	24	26.4	0.00020	A= 48.00		P= 44.00		0.045	0.045	0.50	0.50		IV	M	E
	521+91	0.31	20	24	26.1	0.00020	A= 48.00		P= 44.00		0.045	0.045	0.50	0.50		IV	M	E
	456+22	0.83	44	46	24.8	0.00020	8.0	0.04	3.9	1.5:1	0.045	0.025	0.85	1.53		II	M	E
	388+00	3.22	138	143	23.4	0.00020	13.0	0.04	5.5	1.5:1	0.040	0.025	1.22	1.95		II	M	E
	336+79	4.04	166	170	22.3	0.00023	13.0	0.03	5.8	1.5:1	0.040	0.025	1.35	2.16		II	M	E
	316+00	4.97	198	202	21.8	0.00023	15.0	0.03	6.0	1.5:1	0.040	0.025	1.40	2.24		II	M	E
	246+69	6.36	244	246	20.2	0.00023	15.0	0.02	6.2	1.5:1	0.035	0.025	1.63	2.28		II	M	E
	240+00	6.54	250	253	20.0	0.00023	15.0	0.02	6.3	1.5:1	0.035	0.025	1.64	2.30	34800	II	M	E
	205+60	7.43	278	379	19.2	0.00023	A= 210.00		P= 45.00		0.035	0.035	1.80	1.80		IV	M	E
	170+00	7.56	282	394	18.4	0.00023	A= 237.00		P= 57.00		0.035	0.035	1.67	1.67		IV	M	E
	123+50	7.73	288	299	17.4	0.00023	A= 267.00		P= 52.00		0.060	0.060	1.12	1.12		VI	M	E
	32+00	10.01	357	371	15.7	0.00018	A= 343.00		P= 58.00		0.060	0.060	1.08	1.08		VI	M	E
L-4A	357+79	0.07	5	32	26.6	0.00110	5.0	0.12	2.5	1.5:1	0.045	0.025	1.47	2.65		II	M	E
	295+90	0.73	41	43	19.8	0.00110	5.0	0.12	2.9	1.5:1	0.045	0.025	1.59	2.86		II	M	E
	169+00	1.01	53	54	15.0	0.00038	8.0	0.04	3.6	1.5:1	0.045	0.025	1.12	2.02		II	M	E
	122+43	2.64	117	121	13.2	0.00038	9.0	0.07	4.9	1.5:1	0.040	0.025	1.51	2.42		II	M	E
	40+00	3.34	141	150	12.5	0.00008	17.0	0.01	6.0	1.5:1	0.035	0.025	0.96	1.34	47600	II	M	E
	25+00	3.47	146	161	12.4	0.00008	A= 157.00		P= 35.00		0.035	0.035	1.03	1.03		IV	M	E
	0+00	3.69	153	258	12.2	0.00008	A= 360.00		P= 62.00		0.060	0.060	0.72	0.72		VI	M	S
L-4B	215+07	0.69	39	41	24.0	0.00100	5.0	0.11	2.9	1.5:1	0.045	0.025	1.52	2.74		II	M	E
	185+00	0.83	46	47	21.0	0.00100	5.0	0.11	3.1	1.5:1	0.045	0.025	1.57	2.83		II	M	E
	128+65	1.12	58	59	19.1	0.00033	8.0	0.04	3.9	1.5:1	0.045	0.025	1.09	1.96		II	M	E
	101+13LA	2.71	127	129	18.2	0.00033	14.0	0.06	4.4	1.5:1	0.040	0.025	1.42	2.27		II	M	E
	110+05LB	2.71	127	175	18.2	0.00045	A= 117.00		P= 32.00		0.050	0.050	1.50	1.50		VI	M	E
	52+35LA	3.50	150	175	15.6	0.00045	A= 117.00		P= 32.00		0.050	0.050	1.50	1.50		VI	M	E
	42+78LB	1.90	90	93	15.6	0.00014	16.0	0.05	4.4	1.5:1	0.040	0.025	0.94	1.50		II	M	E
	0+00	2.09	98	101	15.0	0.00014	16.0	0.02	4.6	1.5:1	0.040	0.025	0.96	1.54	26000	II	M	E
L-4D	26+00	0.04	4	24	22.6	0.00060	5.0	0.06	2.5	1.5:1	0.045	0.025	1.09	1.96		II	M	E
	18+00	0.08	6	24	22.1	0.00060	5.0	0.06	2.5	1.5:1	0.045	0.025	1.09	1.96		II	M	E
	0+00	0.16	11	24	21.0	0.00060	5.0	0.06	2.5	1.5:1	0.045	0.025	1.09	1.96	4700	II	M	E
L-4E	61+49	0.59	34	35	26.6	0.00030	6.0	0.04	3.4	1.5:1	0.045	0.025	0.93	1.67		II	M	E
	49+08	0.68	38	39	26.3	0.00030	6.0	0.04	3.6	1.5:1	0.045	0.025	0.96	1.73		II	M	E
	21+00	1.06	55	56	25.4	0.00030	8.0	0.04	3.9	1.5:1	0.045	0.025	1.04	1.87		II	M	E
	0+00	1.69	83	83	24.8	0.00030	9.0	0.03	4.3	1.5:1	0.040	0.025	1.25	2.00	8000	II	M	E
L-4E-1	30+00	0.09	7	33	29.8	0.00117	5.0	0.12	2.5	1.5:1	0.045	0.025	1.52	2.74		II	M	E
	0+00	0.26	17	33	26.3	0.00117	5.0	0.12	2.5	1.5:1	0.045	0.025	1.52	2.74	1100	II	M	E
L-5	134+60	4.12	172	186	12.2	0.00005	A= 288.00		P= 53.00		0.050	0.050	0.65	0.65		VI	M	S
	70+00	8.07	320	370	11.6	0.00010	A= 370.00		P= 60.00		0.050	0.050	1.00	1.00		VI	M	S
	40+00	8.32	320	341	11.4	0.00007	A= 442.00		P= 81.00		0.050	0.050	0.77	0.77		VI	M	S
	10+00	8.57	320	367	11.2	0.00005	A= 511.00		P= 81.00		0.050	0.050	0.72	0.72		VI	M	S
	0+00	8.61	320	359	11.2	0.00003	A= 590.00		P= 82.00		0.050	0.050	0.61	0.61		VI	M	S
L-5A	23+11	3.36	163	168	12.5	0.00009	A= 213.00		P= 46.00		0.050	0.050	0.79	0.79		VI	M	E
	0+00	3.46	163	163	12.2	0.00009	A= 215.00		P= 49.00		0.050	0.050	0.75	0.75		VI	M	E
L-5A-1	52+35	1.73	84	114	15.6	0.00060	A= 88.00		P= 38.00		0.050	0.050	1.29	1.29		VI	M	E
	0+00	2.03	95	124	12.5	0.00060	A= 86.00		P= 31.00		0.050	0.050	1.45	1.45		VI	M	E

1/ See Attached Coding System for Inventory of Channel Work

(continued)
Table 3B - Structure Data Channels
Choctaw Bayou Watershed, Louisiana

Channel	Station	Drainage Area	Capacity Req'd	Capacity Des.	Water Surf-Elev.	Hydr. Grad.	Channel Dimensions Bottom Width	Channel Dimensions Bottom Grade	Channel Dimensions Flow Depth	Channel Dimensions Side Slope	"n" Value Aged	"n" Value As Built	Velocities Aged	Velocities As Built	Excavation	Inventory of Chan. Work 1/ Type of Work	Inventory of Chan. Work 1/ Type Chan. Before Proj.	Inventory of Chan. Work 1/ Flow Cond. Before Proj.
		sq mi	cfs	cfs		ft/ft	ft	%	ft				fps	fps	cu yd			
L-6	503+49	0.44	26	27	23.1	0.00075	5.0	0.09	2.5	1.5:1	0.045	0.025	1.22	2.20		II	N	E
	466+20	0.68	37	38	20.3	0.00075	6.0	0.09	2.8	1.5:1	0.045	0.025	1.32	2.38		II	N	E
	394+02	2.46	107	109	18.5	0.00025	10.0	0.04	5.0	1.5:1	0.040	0.025	1.25	2.00		II	N	E
	359+33	3.34	136	139	18.1	0.00010	17.0	0.02	5.8	1.5:1	0.040	0.025	0.93	1.49		II	N	E
	144+80	7.91	285	291	16.0	0.00010	20.0	0.02	7.5	1.5:1	0.035	0.025	1.24	1.74		II	N	E
	65+00	15.70	517	526	15.2	0.00010	34.0	0.01	7.5	1.5:1	0.030	0.023	1.55	2.02		II	N	E
	49+75	16.01	517	526	15.0	0.00010	34.0	0.01	7.5	1.5:1	0.030	0.023	1.55	2.02		II	N	E
	7+33	16.28	517	526	14.6	0.00010	34.0	0.01	7.5	1.5:1	0.030	0.023	1.55	2.02	204000	I	O	E
L-6A	286+32	0.00	0	15	24.6	0.00023	5.0	0.04	2.5	1.5:1	0.045	0.025	0.67	1.21		II	M	E
	230+50	0.46	26	27	23.3	0.00023	6.0	0.04	3.2	1.5:1	0.045	0.025	0.79	1.42		II	M	E
	155+00	2.25	100	103	21.6	0.00023	14.0	0.03	4.3	1.5:1	0.040	0.025	1.17	1.87		II	M	E
	120+00	2.74	118	123	20.8	0.00023	15.0	0.03	4.6	1.5:1	0.040	0.025	1.22	1.95	19300	II	M	E
	54+00	3.38	142	193	18.3	0.00038	A= 120.00		P= 36.00		0.040	0.040	1.61	1.61		IV	M	E
	0+00	5.18	201	237	16.2	0.00038	A= 133.00		P= 35.00		0.040	0.040	1.78	1.78		IV	M	E
L-6A-1	65+00	0.81	42	53	20.5	0.00034	A= 48.00		P= 20.00		0.045	0.045	1.08	1.08		IV	M	E
	15+00	1.28	62	88	18.8	0.00034	A= 69.00		P= 27.00		0.040	0.040	1.27	1.27		IV	M	E
	0+00	1.42	67	105	18.3	0.00034	A= 129.00		P= 35.00		0.080	0.080	0.82	0.82		VI	M	E
L-6A-2	88+58	0.00	0	9	24.1	0.00009	5.0	0.04	2.5	1.5:1	0.045	0.025	0.42	0.76		II	M	E
	52+00	0.33	20	20	23.8	0.00009	6.0	0.04	3.5	1.5:1	0.045	0.025	0.52	0.94		II	M	E
	12+00	0.70	37	41	23.4	0.00009	12.0	0.01	3.6	1.5:1	0.040	0.025	0.65	1.04		II	M	E
	0+00	0.99	49	52	23.3	0.00009	15.0	0.01	3.7	1.5:1	0.040	0.025	0.68	1.09	7500	II	M	E
L-6B	51+89	0.10	7	11	18.7	0.00012	5.0	0.05	2.5	1.5:1	0.045	0.025	0.49	0.88		II	M	E
	34+00	0.22	14	15	18.5	0.00012	5.0	0.05	3.0	1.5:1	0.045	0.025	0.54	0.97		II	M	E
	15+00	0.70	38	38	18.3	0.00012	10.0	0.02	3.7	1.5:1	0.045	0.025	0.66	1.19	2600	II	M	E
	0+00	0.82	42	58	18.1	0.00012	A= 65.00		P= 26.00		0.045	0.045	0.66	0.66		IV	M	E
L-6C	24+18	0.45	25	25	19.0	0.00020	7.0	0.04	3.0	1.5:1	0.045	0.025	0.73	1.31		II	M	E
	0+00	0.62	32	33	18.5	0.00020	8.0	0.04	3.3	1.5:1	0.045	0.025	0.78	1.40	3800	II	M	E
L-6D	0+00	0.00	0	22	24.5	0.00053	5.0	0.05	2.5	1.5:1	0.045	0.025	1.02	1.84		II	M	E
	33+26	0.12	8	22	22.8	0.00053	5.0	0.05	2.5	1.5:1	0.045	0.025	1.02	1.84		II	M	E
	66+40	0.77	42	44	21.0	0.00053	6.0	0.08	3.3	1.5:1	0.045	0.025	1.21	2.18	2300	II	M	E
L-6D-1	0+00	0.09	7	18	23.9	0.00035	5.0	0.04	2.5	1.5:1	0.045	0.025	0.83	1.49		II	M	E
	30+55	0.26	17	18	22.8	0.00035	5.0	0.04	2.5	1.5:1	0.045	0.025	0.83	1.49	2100	II	M	E
L-7	98+55	4.11	179	498	16.4	0.00060	A= 286.00		P= 59.00		0.060	0.060	1.74	1.74		VI	M	E
	89+21	5.47	219	387	15.8	0.00060	A= 230.00		P= 50.00		0.060	0.060	1.68	1.68		VI	M	E
	52+50	5.83	229	358	15.5	0.00009	A= 260.00		P= 52.00		0.030	0.030	1.38	1.38		IV	M	E
	0+00	7.72	288	438	15.0	0.00009	A= 296.00		P= 53.00		0.030	0.030	1.48	1.48		IV	M	E
L-7A	113+15	0.18	13	28	20.6	0.00080	5.0	0.08	2.5	1.5:1	0.045	0.025	1.26	2.27		II	M	E
	95+47	0.23	15	28	19.2	0.00080	5.0	0.08	2.5	1.5:1	0.045	0.025	1.26	2.27		II	M	E
	71+72	0.96	51	53	17.3	0.00080	7.0	0.11	3.1	1.5:1	0.045	0.025	1.48	2.66		II	M	E
	62+09	1.00	53	55	17.1	0.00025	10.0	0.03	3.7	1.5:1	0.045	0.025	0.95	1.71	5200	II	M	E
	45+00	1.19	61	106	16.6	0.00025	A= 146.00		P= 38.00		0.080	0.080	0.73	0.73		VI	M	E
	0+00	1.61	77	88	15.5	0.00025	A= 74.00		P= 26.00		0.040	0.040	1.19	1.19		IV	M	E
L-7B	131+11	0.00	0	24	23.8	0.00060	5.0	0.06	2.5	1.5:1	0.045	0.025	1.09	1.96		I	O	E
	87+00	0.26	17	24	21.1	0.00060	5.0	0.06	2.5	1.5:1	0.045	0.025	1.09	1.96		I	O	E
	83+00	0.28	19	22	20.9	0.00050	5.0	0.06	2.5	1.5:1	0.045	0.025	0.99	1.78		I	O	E
	44+00	0.47	28	29	19.0	0.00050	5.0	0.06	2.9	1.5:1	0.045	0.025	1.07	1.93		II	M	E
	39+20	0.50	30	31	18.8	0.00050	5.0	0.06	3.0	1.5:1	0.045	0.025	1.09	1.96		I	O	E
	0+00	1.11	58	61	16.4	0.00060	8.0	0.07	3.4	1.5:1	0.045	0.025	1.37	2.47	33500	I	O	E
L-7B-1	30+35	0.00	0	31	21.8	0.00100	5.0	0.10	2.5	1.5:1	0.045	0.025	1.40	2.52		I	O	E
	17+00	0.14	10	31	20.5	0.00100	5.0	0.10	2.5	1.5:1	0.045	0.025	1.40	2.52		I	O	E
	5+00	0.27	18	31	19.3	0.00100	5.0	0.10	2.5	1.5:1	0.045	0.025	1.40	2.52		II	M	E
	0+00	0.32	21	31	18.8	0.00100	5.0	0.10	2.5	1.5:1	0.045	0.025	1.40	2.52	5900	I	O	E
L-9	180+00	0.22	15	33	29.3	0.00070	7.0	0.09	2.5	1.5:1	0.045	0.025	1.23	2.21		I	O	E
	150+00	0.74	41	44	27.2	0.00070	7.0	0.09	2.9	1.5:1	0.045	0.025	1.34	2.41		I	O	E
	137+00	0.97	51	52	23.3	0.00075	7.0	0.09	3.1	1.5:1	0.045	0.025	1.43	2.57		I	O	E
	77+00	1.87	89	105	18.8	0.00075	8.0	0.09	4.0	1.5:1	0.040	0.025	1.87	2.99		I	O	E
	56+50	2.18	101	105	17.3	0.00075	8.0	0.09	4.0	1.5:1	0.040	0.025	1.87	2.99		II	M	E
	0+00	4.89	195	225	16.4	0.00015	23.0	0.02	5.5	1.5:1	0.035	0.025	1.31	1.83	42600	II	M	E
L-9A	106+85	0.00	0	17	19.2	0.00018	7.0	0.05	2.5	1.5:1	0.045	0.025	0.63	1.13		II	M	E
	72+00	0.46	28	30	18.5	0.00018	8.0	0.05	3.2	1.5:1	0.045	0.025	0.73	1.31		II	M	E
	40+00	1.48	73	73	18.0	0.00018	14.0	0.03	3.8	1.5:1	0.040	0.025	0.97	1.55	12000	II	M	E
	20+00	1.64	79	87	17.6	0.00018	A= 95.00		P= 38.00		0.040	0.040	0.92	0.92		IV	M	E
	0+00	1.84	86	145	17.3	0.00018	A= 204.00		P= 65.00		0.060	0.060	0.71	0.71		VI	M	E

1/ See Attached Coding System for Inventory of Channel Work

(continued)
Table 3B - Structure Data Channels
Choctaw Bayou Watershed, Louisiana

Channel	Station	Drainage Area	Capacity Req'd	Capacity Des.	Water Surf-Elev.	Hydr. Grad.	Channel Dimensions Bottom Width	Channel Dimensions Bottom Grade	Channel Dimensions Flow Depth	Channel Dimensions Side Slope	"n" Value Aged	"n" Value As Built	Velocities Aged	Velocities As Built	Excavation	Inventory of Chan. Work 1/ Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
		sq mi	cfs	cfs		ft/ft	ft	%	ft				fps	fps	cu yd			
W-1	16+00	8.64	355	865	17.2	0.00028	A= 804.00		P= 123.00		0.080	0.080	1.08	1.08		VI	N	S
	0+00	9.63	355	865	16.8	0.00028	A= 804.00		P= 123.00		0.080	0.080	1.08	1.08		VI	N	S
L-10	68+43	0.20	14	14	17.5	0.00010	8.0	0.07	2.5	1.5:1	0.045	0.025	0.48	0.86		I	O	E
	45+84	0.49	29	31	17.3	0.00010	9.0	0.07	3.6	1.5:1	0.045	0.025	0.59	1.06	3800	I	O	E
	0+00	0.68	37	71	16.8	0.00010	A= 196.00		P= 72.00		0.080	0.080	0.36	0.36		VI	N	E
L-11	133+00	0.55	32	34	23.7	0.00055	7.0	0.10	2.7	1.5:1	0.045	0.025	1.14	2.05		II	M	E
	112+32	1.09	57	58	22.5	0.00055	8.0	0.10	3.4	1.5:1	0.045	0.025	1.31	2.36		II	M	E
	31+35	2.84	126	127	18.1	0.00055	10.0	0.06	4.4	1.5:1	0.040	0.025	1.74	2.78		II	M	E
	0+00LA	3.16	137	141	17.8	0.00010	19.0	0.02	5.6	1.5:1	0.040	0.025	0.92	1.47		II	M	E
	500+00LB	3.16	137	141	17.8	0.00010	19.0	0.02	5.6	1.5:1	0.040	0.025	0.92	1.47		II	M	E
	460+00	3.57	150	174	17.4	0.00010	19.0	0.02	5.8	1.5:1	0.035	0.025	1.08	1.51	19700	II	M	E
	452+00	3.65	153	182	17.3	0.00010	A= 474.00		P= 160.00		0.080	0.080	0.38	0.38		VI	M	E
L-11A	40+78	0.14	10	23	24.0	0.00035	7.0	0.06	2.5	1.5:1	0.045	0.025	0.87	1.57		II	M	E
	0+00	0.76	42	44	22.6	0.00035	8.0	0.06	3.3	1.5:1	0.045	0.025	1.03	1.85	2000	II	M	E

1/ See Attached Coding System for Inventory of Channel Work

Coding System for

Inventory of Channel Work

Status	C - constructed or under contract
	P1 - planned and in an approved project but not constructed or under contract
Type of Work	I - establishment of new channel including necessary stabilization measures
	II - enlargement or realignment of existing channel or stream
	III - cleaning out natural or manmade channel (includes bar removal and major clearing and snagging operation)
	IV - clearing and removal of loose debris within channel section
	V - stabilization, by continuous treatment or localized problem areas, as primary purpose (present capacity adequate)
	VI - present capacity adequate, no work proposed
Type of Channel Prior to Project	N - an unmodified, well-defined natural channel or stream
	M - manmade ditch or previously modified channel
	O - no or practically no defined channel
Flow Condition Prior to Project	Pr - perennial: flow at all times except during extreme drought
	I - intermittent: continuous flow during some seasons of the year but little or no flow during other seasons
	E - ephemeral: flow only during periods of surface runoff, otherwise dry
	S - ponded water: no noticeable flow, caused by lack of outlet or high ground water table

TABLE 4 - ANNUAL COST

Choctaw Bayou Watershed, Louisiana

(Dollars) 1/

Evaluation Unit	Amortization of Installation Cost 2/	Operation and Maintenance Cost 3/	Total
I	8,100	4,100	12,200
II	40,700	13,100	53,800
III	27,300	8,000	35,300
IV	15,800	7,200	23,000
V	34,900	11,100	46,000
Project Administration	14,800	-	14,800
Grand Total	141,600	43,500	185,100

1/ Price base - 1975
2/ 50 years @ 5-7/8 percent interest
3/ In addition to $43,500 operation and maintenance cost for project channels, $3,200 is necessary to maintain the existing 8 miles of adequate channels downstream from the benefit areas in West Baton Rouge Parish, Evaluation Unit I.

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TABLE 5 - ESTIMATED AVERAGE ANNUAL
FLOOD DAMAGE REDUCTION BENEFITS

Choctaw Bayou Watershed, Louisiana

(Dollars)[1/]

Item	Estimated Average Annual Damage		Damage Reduction Benefits
	Without Project	With Project	
Floodwater			
Agricultural Crop and Pasture	527,700	117,700	410,000
Indirect	52,800	11,800	41,000
Total	580,500	129,500	451,000

1/ Price base - 1975

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TABLE 6 - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Choctaw Bayou Watershed, Louisiana

(Dollars)

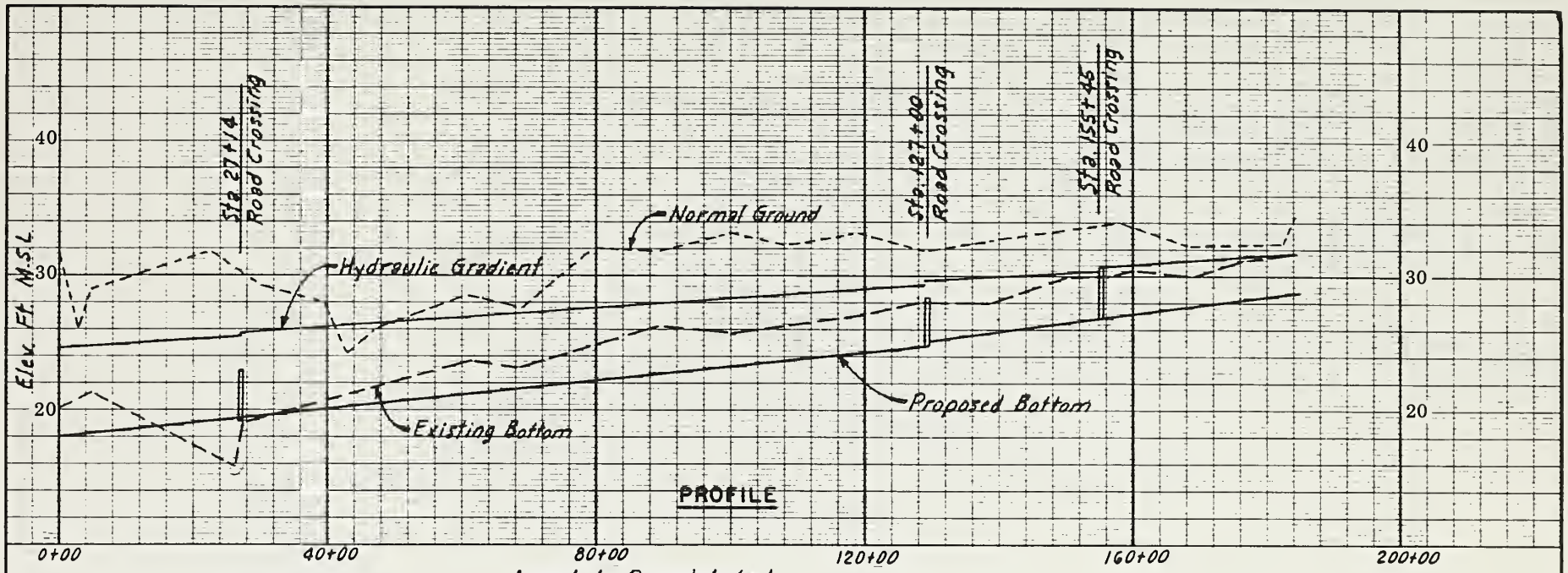
Evaluation Unit	Average Annual Benefits[1]					Total	Average Annual Cost[3]	Benefit Cost Ratio
	Damage Reduction[1]	More Intensive Land Use[1]	Drainage[1]	Employment[2]	External Economies[1]			
I	31,400	6,400	28,600	-	11,100	77,500	12,200	6.4:1
II	192,500	39,000	175,000	-	51,700	458,200	53,800	8.5:1
III	42,500	8,500	38,600	1,400	18,100	109,100	35,300	3.1:1
IV	82,200	16,500	74,700	3,500	30,900	207,800	23,000	9.0:1
V	102,400	20,700	93,100	4,600	25,900	246,700	46,000	5.4:1
Project Administration	xxx	xxx	xxx	xxx	xxx	xxx	14,800	xxx
GRAND TOTAL	451,000	91,100	410,000	9,500	137,700	1,099,300	185,100	5.9:1

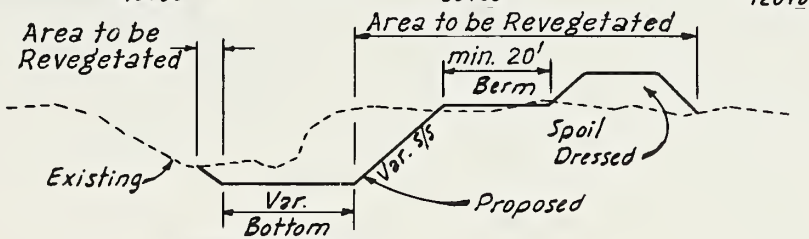
1/ Price base: Current normalized prices, October 1974.

2/ Price base: 1975 prices

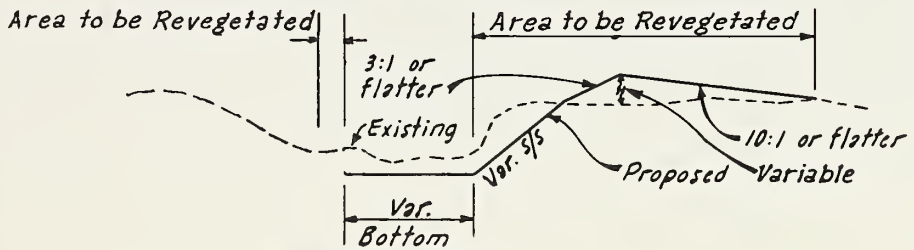
3/ Price base: Installation cost - 1975 prices amortized for 50 years at 5.875 percent; Operation and Maintenance cost - 1975 prices.

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SPOIL STACKED



SPOIL SPREAD

FIGURE 1

AREA TO BE REVEGETATED
CHANNEL PROFILE AND CROSS SECTIONS

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35061

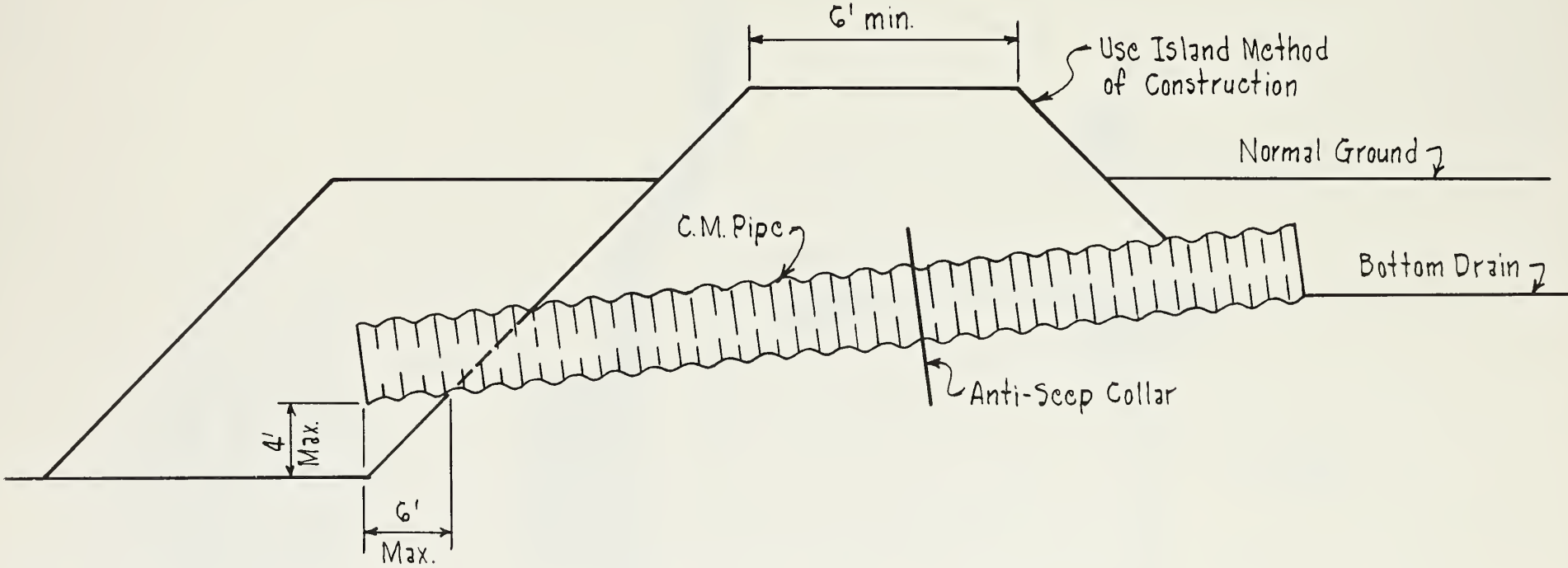


FIGURE 2

TYPICAL STRUCTURE FOR WATER CONTROL (PIPE DROP)

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35062

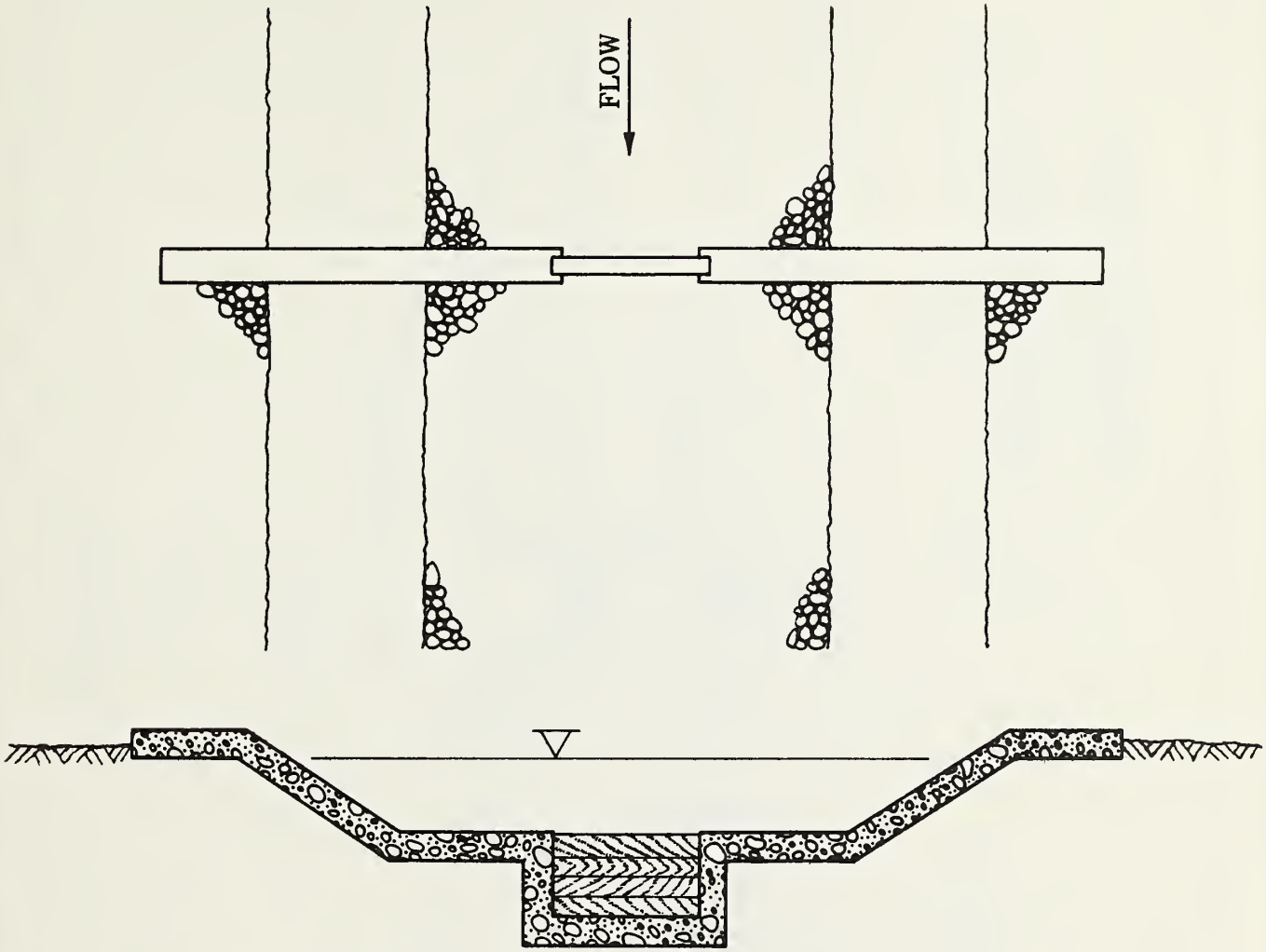


FIGURE 3

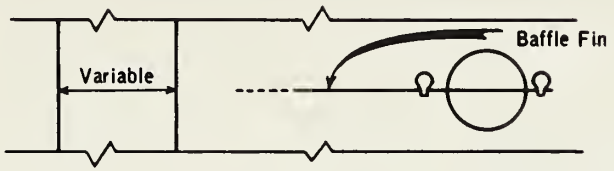
STRUCTURE FOR WATER CONTROL
(STOP LOG WEIR)

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

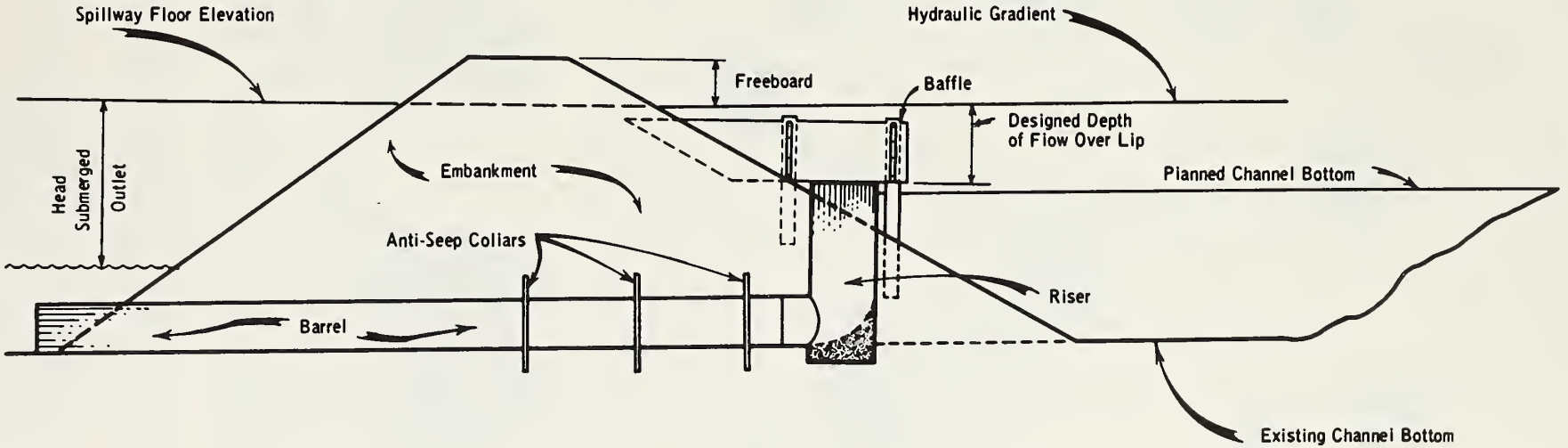
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

AUGUST 1975

7-75 4-35063



PLAN VIEW OF BAFFLE AND RISER



SECTION VIEW

FIGURE 4

TYPICAL GRADE STABILIZATION STRUCTURE

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35064

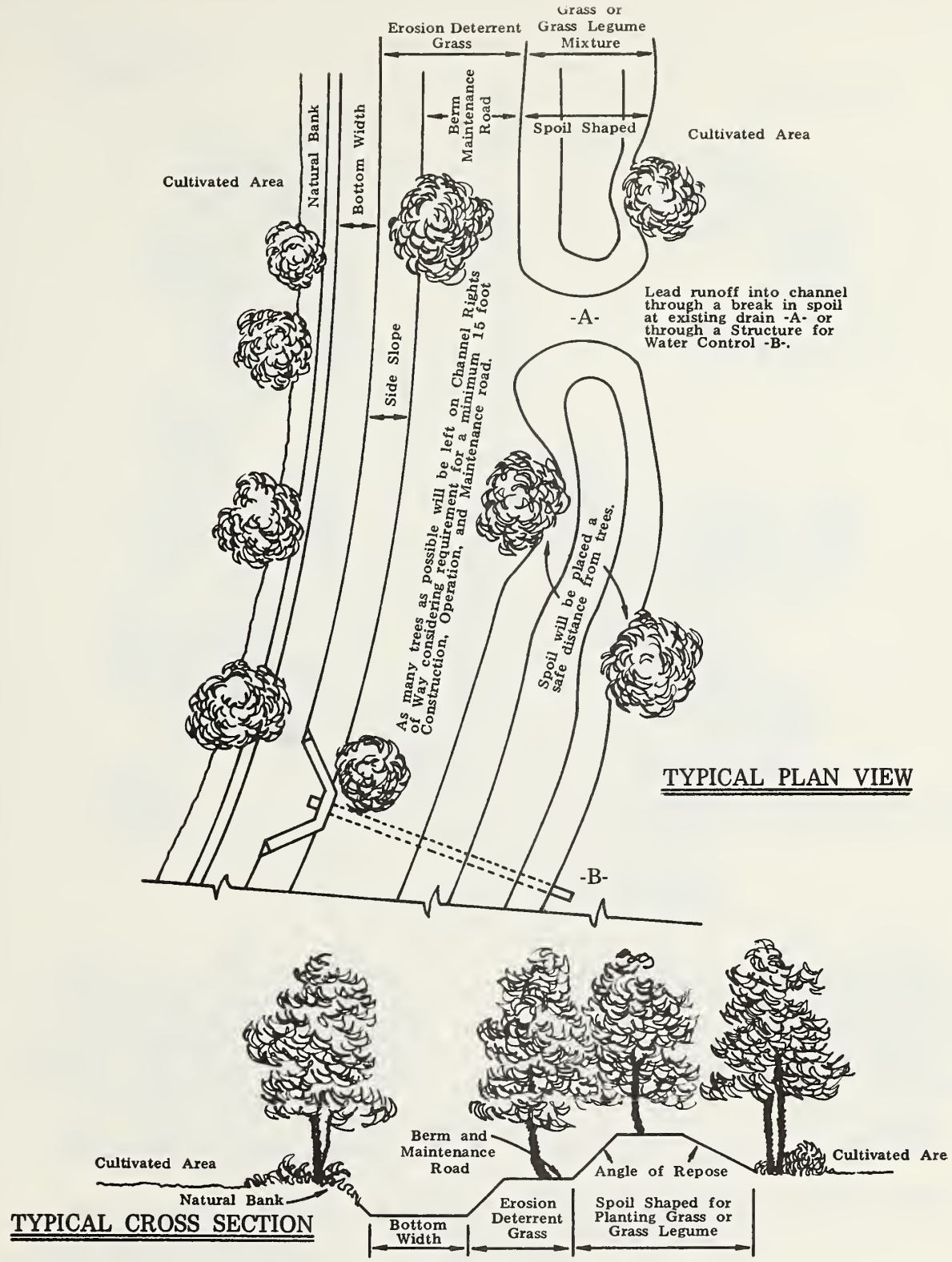


FIGURE 5

TYPICAL PLAN VIEW AND CROSS SECTION OF CHANNELS
WHERE WOODY VEGETATION EXISTS ADJACENT TO
CULTIVATED AREA

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35065
USDA-SCS-FORT WORTH, TEX. 1975

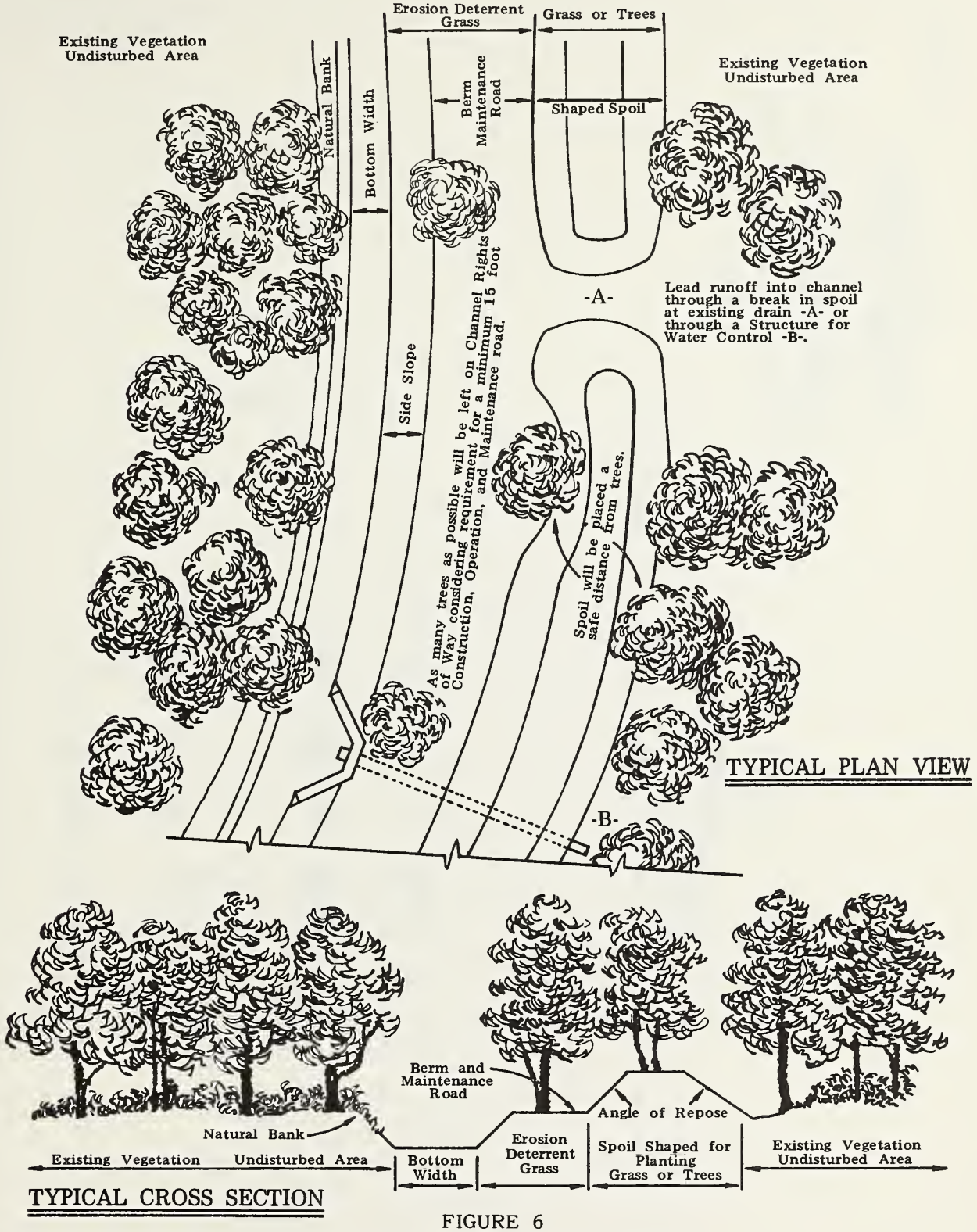


FIGURE 6

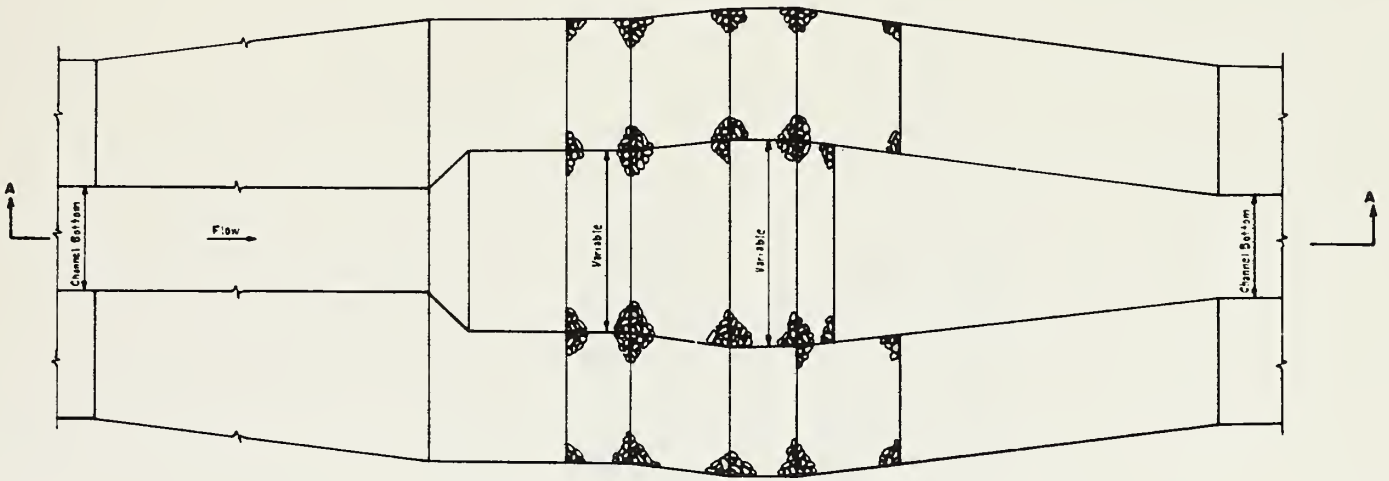
TYPICAL PLAN VIEW AND CROSS SECTION OF
CHANNELS THROUGH FOREST LAND

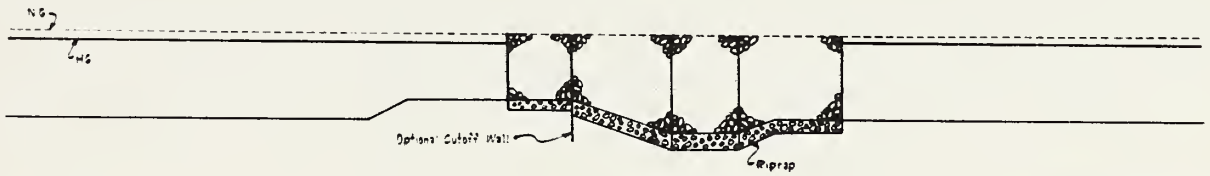
CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35066
USDA-SCS-FORT WORTH, TEX. 1975





SECTION A—A

FIGURE 7

STRUCTURE FOR WATER CONTROL (WEIR)

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35067

CHOCTAW BAYOU WATERSHED

LOUISIANA

ADDENDUM

WATERSHED PLAN

Phase-In of Principles and
Standards for Planning Water
and Related Land Resources

February 1976

INTRODUCTION

This addendum is based on the Water Resource Council's "Principles and Standards for Planning Water and Related Land Resources," which became effective October 30, 1973. It is prepared to be consistent with the requirements of the Water Resource Council's Procedure No. 1 for the phase-in of the Principles and Standards. The information presented is:

Part I - Discount Rate Comparison

An evaluation of the selected plan without reformulation, using current normalized prices, current construction costs, and the current interest rate.

Part II - Four Account Displays

Evaluated effects of the selected plan are displayed under separate accounts for (1) National Economic Development, (2) Environmental Quality, (3) Regional Development, and (4) Social Well-Being. The displays are consistent with the intent of the Principles and Standards.

Part III - Abbreviated Environmental Quality Plan

An environmental quality plan, consistent with the intent of the Principles and Standards, but which is abridged in detail, has been developed by an interdisciplinary team. It is a plan, other than the selected plan, not to be installed, and formulated to enhance environmental quality by the management, conservation, preservation, creation, restoration, or improvement of the quality of certain natural and cultural resources and ecological systems. This plan was formulated from information and data obtained during the investigative and analysis phases of project planning. Formulation began with the inventory and recognition of the watershed problems and needs. Desired environmental effects, as translated from the problems and needs, provided a basis for examining appropriate water and land resource use and management opportunities. Only potential actions and impacts are considered under this plan. Opportunities that emphasized contributions to the component needs were selected and are shown as plan elements of the abbreviated environmental quality plan. The expenditure of $1,324,900 for applying land treatment measures, and $628,400 annually for the installation of the Environmental Quality Plan is a preliminary estimate.

Implementation of features of this environmental quality plan would require acceptance by the local people. Adequate legal authorities do exist for installation; however, funding for all plan elements is presently not available through existing legislative authorities.

CHOCTAW BAYOU WATERSHED

Louisiana

Section 1 - Discount Rate Comparison

On the basis of a discount rate of 6.125 percent, the total average annual benefits of this project are $1,090,500. Based on 1975 construction costs, the average annual cost of the project for the selected alternative is $190,100. The ratio of benefits to cost is 5.7:1. Total average annual benefits, excluding external economies, are estimated to be $953,900, providing a benefit-cost ratio of 5.1:1.

SECTION 2

SELECTED ALTERNATIVE
NATIONAL ECONOMIC DEVELOPMENT ACCOUNT
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects Average Annual 1/
Beneficial Effects:	
The value to users of increased outputs of goods and services	
A. Flood prevention	$496,550
B. Drainage	455,550
C. Utilization of unemployed and underemployed labor resources	
1. Project construction	4,800
2. Land rights relocations	2,400
3. Operation, Maintenance and Replacement	2,300
Total beneficial effects	961,600
Adverse effects:	
A. Channel work with appurtenant structures	
1. Project installation (structural measures)	126,800
2. Project administration	14,800
3. Operation, Maintenance and Replacement	43,500
Total adverse effects	185,100
Net beneficial effects	776,500

1/ Based on a discount rate of 5.875 percent for 50 years.

SELECTED ALTERNATIVE
REGIONAL DEVELOPMENT ACCOUNT
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects	
	State of Louisiana	Rest of Nation
	Average Annual 1/	
A. Income		
Beneficial effects:		
1. The value of increased output of goods and services to users residing in the region		
a. Flood prevention	$496,600	
b. Drainage	455,500	
c. Utilization of unemployed and underemployed labor resources-project construction and OM&R	9,500	
2. The value of outputs to users residing in the region from external economies		
a. Secondary	137,700	
Total beneficial effects	1,099,300	
Adverse effects:		
1. The value of resources contributed from within the region to achieve the outputs		
a. Multiple-purpose drainage and flood prevention channel work		
1) Project installation	68,700	$58,100
2) Project administration	800	14,000
3) OM&R	43,500	0
Total adverse effects	113,000	72,100
Net beneficial effects	986,300	(-) 72,100
B. Employment		
Beneficial effects:		
1. Employment for project construction	38 man-years of local labor over a 5-year period	

1/ Based on a discount rate of 5.875 percent for 50 years.

SELECTED ALTERNATIVE
REGIONAL DEVELOPMENT ACCOUNT (continued)
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects	
	State of Louisiana	Rest of Nation
2. Employment in land treatment installation	92 man-years of local labor over a 10-year period	-
3. Employment in OM&R	3 permanent semi-skilled jobs for 50 years	
Total beneficial effects:	38 man-years of local labor over the project installation period	-
	92 man-years of local labor over the 10-year land treatment period	-
	3 permanent semi-skilled jobs for 50 years	
Adverse effects:		
1. Decrease in number and types of jobs	-0-	
Total adverse benefits	-0-	
Net beneficial effects	38 man-years of local labor over the 5-year project construction period	-
	92 man-years of local labor over the 10-year land treatment period	-
	3 permanent semi-skilled jobs for 50 years	-
C. Population Distribution		
Beneficial effects:	The increased average annual net farm income of about $4,400 per farm should help slow the trends of decreasing number of farms and out-migration. The project will create a need for 38 man-years of local labor over the project installation period, 92 man-years of local labor over the 10-year land treatment period, and 3 permanent semi-skilled jobs for 50 years.	-
Adverse effects:		
D. Regional Economic Base and Stability		
Beneficial effects:	Flood protection and improved drainage provided by the project will reduce the risks of agriculture, enable increased	

SELECTED ALTERNATIVE
REGIONAL DEVELOPMENT ACCOUNT (continued)
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects	
	State of Louisiana	Rest of Nation
Beneficial effects: (continued)	efficiencies of agricultural production and bring about increases in farm income. Annual net farm income will increase $952,100. The project will create a need for 38 man-years of local labor over the project installation period, 92 man-years of local labor over the 10-year land treatment period, and 3 permanent semi-skilled jobs for 50 years in an area of which part has been classified by the Economic Development Administration as eligible for financial assistance under Title IV because of severely depressed economic conditions.	-
	Flood protection and improved drainage are integral parts of increased farm productivity and improved community life in the project area.	-
Adverse effects:	-	-

SECTION 2

SELECTED ALTERNATIVE
ENVIRONMENTAL QUALITY ACCOUNT
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects
Beneficial and adverse effects:	
A. Areas of natural beauty	1. Spoil areas shaped according to design, and vegetated with various grasses and seedlings will present a pleasing appearance.
	2. Improved agricultural conditions as a result of the project will present attractive agrarian scenes.
	3. The potential for 1,200 acres of forest land clearing will result from the project.
	4. Channel work will alter the present alignment of channels as necessary.
	5. Channel areas will be cleared of trash and debris to create a more aesthetically pleasing appearance.
	6. During construction, areas will be disturbed creating a temporary undesirable appearance.
	7. Installation of the structure for water control (stop log weir) located downstream from Lake Clause will allow the water level of this lake to be fluctuated for the purpose of fish and wildlife management.
	8. Two weirs will create 20 surface acres of ponded water, averaging 2 feet deep for a length of 6 miles.

SECTION 2

SELECTED ALTERNATIVE
ENVIRONMENTAL QUALITY ACCOUNT (continued)
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects
B. Quality considerations of water, land, and air resources	1. Sediment from sheet erosion over the entire watershed will be reduced from 0.3 ton per acre per year without the project to 0.27 ton per acre per year with the project. This is a reduction of 10 percent.
	2. During construction there will be an increase in air and noise pollution in the immediate area of construction.
	3. During construction there will be a temporary increase in turbidity.
	4. Construction will cause some temporary sedimentation.
	5. The reduction in sediment will reduce the amount of pesticides and fertilizers attached to soil particles entering aquatic environments.
C. Biological resources and selected ecosystems	1. The clearing of 288 acres of forest land and wooded channel banks for channel rights-of-way will reduce habitat for forest wildlife species.
	2. The conversion of 270 acres of wooded channel banks and forest land to open land will increase habitat for open land species.
	3. Rabbit habitat along channels disturbed by the project will revert to original carrying capacity following construction as a result of seeding berms and natural reestablishment of vegetation.

SECTION 2

SELECTED ALTERNATIVE
ENVIRONMENTAL QUALITY ACCOUNT (continued)
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects
C. Biological resources and selected ecosystems (continued)	4. Wildlife habitat will be retained, managed, or created on 29,200 acres.
	5. The crop and forage base will be maintained and improved.
	6. Plant succession following construction will be accelerated by planting seedlings.
D. Historical, archaeological, and geological	1. No known archaeological or historical sites will be disturbed.
E. Irreversible or irretrievable commitments	1. Additional area occupied by channels will preclude the use of 42 acres for any other purpose for the life of the project.

SECTION 2

SELECTED ALTERNATIVE
SOCIAL WELL-BEING
Choctaw Bayou Watershed, Louisiana

Components	Measures of Effects
Beneficial and adverse effects:	
A. Real income distribution	1. The project will create three low to medium income permanent jobs for area residents for the 50-year project period.
	2. Regional income benefits of $1,099,300 will be created. The percent of distribution of this income by income classes is not readily available.
	3. Local costs borne by the region total $113,000. The percent of distribution of this cost by income classes is not readily available.
B. Life, health, and safety	1. Out-of-bank flow will be reduced 78 percent, thereby reducing flood damages accordingly.

SECTION 3

ENVIRONMENTAL QUALITY PLAN
(Abbreviated)

ENVIRONMENTAL PROBLEMS

Flooding and inadequate drainage are two principal problems in this watershed which impair the quality of the land and water resources. These problems occur on approximately 34,300 acres of open land. Sediment, trash, and litter deposited by floodwater reduce the natural beauty of the area. Soil erosion caused by runoff results in gullies and other areas that are aesthetically undesirable. Water quality is reduced during periods of excess runoff due to the transport of sediment in channel flows. Such sediment detracts from the visual quality of the surface water resource and temporarily diminishes the suitability of the resource for fish habitat and other aquatic populations. Water that persists after high water recedes becomes stagnant and oftentimes odorous. It harbors mosquitoes and becomes a potential source for other vectors.

The conversion of forest land to cropland is causing a net loss in both game and nongame species of wildlife. Loss of forest land is resulting in a loss of habitat for white-tailed deer, squirrels, swamp rabbits, wild turkeys, and many nongame forest wildlife species. Forest land conversion is, however, creating habitat for bobwhite quail, mourning doves, cottontail rabbits, and nongame species, but these open land species are limited in number due to the "clean farming" associated with intensive crop production. When crops are harvested, the wildlife cover that exists is totally and suddenly removed leaving cover only along fence rows, drainage ditches, and in scattered odd areas. Approximately 7,000 acres of forest land have been converted to open agricultural land in the last 10 years and an estimated 23,900 additional acres will be converted in the future.

COMPONENT NEEDS

Environmental component needs for the watershed consist of floodwater damage reduction and improved drainage on some agricultural land, sediment and erosion reduction, fish and wildlife habitat improvement and development, forest land preservation, and proper waste disposal.

PLAN ELEMENTS

The elements of this Environmental Quality Plan give consideration to the previously specified components of the environmental quality objective. Land treatment conservation measures which could be applied include conservation cropping systems, drainage mains and laterals, drainage field ditches, drainage land grading, crop residue management, pastureland and hayland management and planting, forest land management including wildfire control, and wildlife wetland and upland habitat management. These measures couldbe applied to approximately 28,300 acres at a cost of about $1,224,900. Drainage and flood prevention land treatment measures could be installed on open agricultural areas even though existing outlets are limited.

Upland wildlife habitat could be developed and improved by establishing occasional hedgerows across open fields and plantings beneficial to wildlife in odd or unused small areas of farms and other tracts of land. A program of this nature on 1,000 acres would cost approximately $100,000. This program would undoubtedly require economic inducements to land users to get them to participate.

It is estimated that 18,300 acres of cropland and pastureland on the more poorly drained soils could be allowed to revert to bottom land hardwoods. This land use change would result in an estimated annual loss of $478,400 in net returns to land users. This would also require economic inducements to get land users to participate.

The problem of trash dumping and littering could be alleviated by enacting and enforcing ordinances and conducting public campaigns against dumping and littering. Large waste receptacles could be placed throughout the parish and emptied regularly. Additional sanitary landfills could also be established for a wider distribution of waste disposal. This program is estimated to cost $150,000 annually.

Institutional Arrangements Available and Needed for the Implementation of the Environmental Quality Plan (EQ Plan)

Legal entities of government exist which would enable implementation of the Environmental Quality Plan. These include parish government and joint powers of parish government and soil and water conservation districts.

Private, State, and Federal programs are available to provide financial and technical assistance for both land acquisition and the establishment of measures included in the Environmental Quality Plan.

ENVIRONMENTAL EFFECTS

This plan is not to be installed and the following represents only potential actions and impacts:

Areas of Natural Beauty

This plan would visually improve the landscape through improved vegetation, less weeds, and less undesirable vegetation. Areas of erosion will also be minimized or eliminated.

Quality Consideration of Water, Air, and Land Resources

This plan would reduce sediment borne by the water. Using soils within their capability will minimize erosion. Water quality will be improved by the installation of land treatment measures and other plan elements.

Biological Resources and Selected Ecological Systems

Installation of land treatment measures would retain and/or improve upland habitat for both game and nongame species which would increase the potential populations of these animals. Wetland wildlife habitat would be improved and managed which would provide the potential for increasing fish and wildlife species associated with this habitat type.

Habitat for forest wildlife would be improved by the conversion of cropland and pastureland on the poorly drained or frequently flooded soils to forest land. This action would also result in a loss of habitat for open land wildlife species.

Irreversible and Irretrievable Effects

The expenditure of $1,324,900 for applying land treatment measures and $628,400 annually for the installation of the Environmental Quality Plan would be an irretrievable effect.

PART II

ENVIRONMENTAL IMPACT STATEMENT

CHOCTAW BAYOU WATERSHED

West Baton Rouge, Pointe Coupee,
and Iberville Parishes, Louisiana

USDA-SCS-EIS-WS-(ADM)-76-3-(F)-LA

CHOCTAW BAYOU WATERSHED
West Baton Rouge, Pointe Coupee, and Iberville Parishes, Louisiana

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alton Mangum, State Conservationist
Soil Conservation Service

Sponsoring Local Organization

Upper Delta Soil and Water Conservation District
Post Office Box A
New Roads, Louisiana 70760

West Baton Rouge Parish Police Jury
Post Office Box 496
Port Allen, Louisiana 70767

Pointe Coupee Parish Police Jury
Post Office Box J
New Roads, Louisiana 70760

February 1976

PREPARED BY
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
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Alexandria, Louisiana 71301

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USDA ENVIRONMENTAL IMPACT STATEMENT

Choctaw Bayou Watershed Project

West Baton Rouge, Pointe Coupee, and Iberville Parishes

Louisiana

Prepared in Accordance with

Sec. 102(2)(C) of P.L. 91-190

Summary Sheet

I. Final

II. Soil Conservation Service

III. Administrative

IV. Description of Project Purpose and Action: This project is for watershed protection, flood prevention, and drainage in West Baton Rouge and Pointe Coupee Parishes, Louisiana. This will be implemented under the authority of the Watershed Protection and Flood Prevention Act (PL-566, 83d Congress, 68 Stat. 666), as amended. The plan includes clearing on 22 miles of channels and 70 miles of channel excavation in a flatland watershed that is 49 percent cropland and grassland. Of the 92 miles of channel work proposed, 83 miles will involve those with ephemeral flow, 4 miles with intermittent flow, and 5 miles with ponded water. Nine miles of work will be undertaken on unmodified natural channels. The majority of the work, 77 miles, is on channels which are manmade or previously modified. Six miles of new channels will be constructed.

V. Favorable Environmental Impacts and Adverse Environmental Effects:

Favorable -

Economic activity in the watershed will increase.

Average annual agricultural damages due to flooding will be reduced 78 percent. Agricultural damages due to poor drainage will be reduced.

The proportion of costs to value per unit of production will decrease.

A total of 34,300 acres of cropland and pastureland will directly benefit from the combined program of land treatment and structural measures.

An additional 16,600 acres of cropland and pastureland will benefit from accelerated land treatment and rotational systems.

A total of 21,200 acres of forest land will benefit from land treatment.

About 190 farmers and 800 farm family members and the employees of those farmers will benefit because of increased income resulting in improved living conditions, better farming equipment, higher education, and better health care. Based on data developed for Pointe Coupee Parish, an estimated 2 percent of these farm families would be minority groups whose income would increase above the poverty level.

The average annual gross sales of farm products will increase, resulting in increased average annual net farm incomes.

Installation of structural measures will create 38 man-years of local labor over a 5-year period. Operation and maintenance will provide 3 man-years of local labor for the 50-year project life.

Installation of land treatment measures will create an additional 92 man-years of local labor over a 10-year period.

Increased sugarcane yields will increase domestic supply of sugar, thereby improving the United States balance of trade.

Increased crop yields will provide more efficient use of prime agricultural land to increase production of protein-rich, high-energy foodstuff to help the world's nutritional problems.

Erosion and the resulting sedimentation will be decreased with installation of planned project measures.

Sheet erosion will be reduced approximately 10 percent, or 24,000 tons per year after project installation.

Sediment delivered to Choctaw Bayou as a result of sheet erosion and project construction activities during the 10-year installation period will be 20,000 tons less than it would be without project conditions. Following the installation period, sedimentation as a result of sheet erosion will be 10 percent, or 6,000 tons per year, less than it would be without project conditions.

Erosion rates on soybean land will be reduced from 5.81 to 4.83 tons per acre per year (7 percent).

Some agricultural chemicals delivered downstream will be reduced due to reduction in sheet erosion as a result of land treatment measures.

Access for maintenance of project channels will be improved.

Installation of two structures for water control (weirs) will create 16 acres of ponded water, which will serve as fish and wildlife habitat, will reduce channel maintenance needs, and will provide additional water for agricultural uses.

Installation of the structure for water control (stop log weir) located downstream from Lake Clause will allow the water level of this lake to be fluctuated for the purpose of fish and wildlife management.

Specific construction measures outlined in the PLANNED PROJECT section will provide for retaining the trees, aesthetics, wildlife, and fish resources on one side and in the existing bottom of Channel L-6 (Bayou Tommy).

The planned elevation of the upper temporary weir in Channel L-6 is such that shallow water will be maintained in the undisturbed bottom of the bayou providing spawning and feeding areas for fish and other wildlife.

Populations of mourning doves, bobwhite quail, and some nongame species will temporarily increase.

The potential land use change from forest to open land would create an additional 1,200 acres of open land habitat.

There will be no stage increases downstream from the watershed.

There will be a reduction in mosquito habitat behind the two weirs on Channel L-6 and because of the reduction of in-channel pot holes.

Adverse -

Approximately 13,000 tons of sediment as a result of construction activity will be delivered to Choctaw Bayou during the 50-year construction period.

More intensive use of open land for agriculture will increase soil erosion problems on this land.

Turbidity and suspended solids will increase downstream during, and for a short period after, construction of project channels.

Occasional periods of aquatic weed growth may occur in the permanent water created by the two structures for water control (weirs).

A temporary lowering of water quality as a result of construction activities will cause a temporary reduction in the biological productivity of the aquatic ecosystem.

About 246 acres of open land, 50 acres of wooded channel banks, and 106 acres of forest land not presently occupied by channels, berms, and spoil will be disturbed during construction. In addition to this, 670 acres presently occupied will be disturbed. The disturbance of 1,072 acres of rights-of-way for project channels will result in some reduction of both game and nongame animals.

A potential loss of 1,200 acres of forest land and habitat could occur as a result of the project. It is estimated that 400 acres of this clearing could occur during the 10-year installation period, and the remaining 800 acres within the next 10 years. This would eliminate 1,200 acres of habitat important for forest dwelling wildlife species.

There will be a loss of 288 acres of potential habitat for forest dwelling wildlife species through the conversion of forest land and wooded channel banks to channels, berms, and spoil.

Habitat for alligator, waterfowl, and other aquatic wildlife will be degraded in some channels where potholes and cover will be removed.

The existing fisheries and benthic community will probably be eliminated in the stream section of Bayou Tommy between the two weirs.

There will be a slight increase in water temperatures where large trees and other bank vegetation are removed. This will be most prevalent in ponded water areas.

The aesthetic resource will be changed along 23 miles of channels in forest land and 15 miles of channels with wooded banks.

The amount of overflow from Bayou Tommy both above and below the diversion on Channel L-6 will be reduced.

The reduction of overbank flooding along Bayou Tommy could cause a reduction in tree growth and mast production for the adjacent forest land.

VI. List of Alternatives Considered:

A. Land Treatment Only
B. Land Use More Tolerant to Wet Soil Conditions.
C. Floodproofing and Land Treatment
D. Channel Work Required to Provide the 1.5-, 3-, and 5-year Levels of Protection and Land Treatment
E. No Project Action

VII. List of Agencies from which Written Comments were received:

U.S. Department of Interior, Office of the Secretary
U.S. Department of Interior, Geological Survey
U.S. Department of Transportation - Federal Highway Administration
U.S. Department of Commerce - The Assistant Secretary for Science and Technology
U.S. Environmental Protection Agency
Louisiana Commission on Intergovernmental Relations
Louisiana Health and Human Resources Administration
Louisiana Art, Historical and Cultural Preservation Agency
Louisiana Wild Life and Fisheries Commission
Department of the Army (DOD)

VIII. Draft statement transmitted to CEQ on December 17, 1975.

USDA SOIL CONSERVATION SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT 1/
for
Choctaw Bayou Watershed
West Baton Rouge, Pointe Coupee, and Iberville Parishes, Louisiana

AUTHORITY

Installation of this project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83d Congress, 68 Stat. 666, as amended.

SPONSORING LOCAL ORGANIZATION

Upper Delta Soil and Water Conservation District
West Baton Rouge Parish Police Jury
Pointe Coupee Parish Police Jury

PROJECT PURPOSES AND GOALS

The purposes of the project are watershed protection, flood prevention, and drainage.

The project goals are:

1. Provide improved farming conditions to increase farm family incomes and improve living conditions.

2. Reduce average soil loss to the minimum consistent with sound conservation farming methods.

3. Provide agricultural land a substantial increase in level of protection from flooding and wetness problems in order to increase economic returns.

4. Facilitate achieving the preceding objectives by providing acceleration of the going land treatment program so that about 55 percent of the agricultural land will be adequately treated by the end of the project installation period.

1/ All information and data, except as otherwise noted, were collected by the Soil Conservation Service and the Forest Service, USDA, and the Louisiana Department of Public Works.

5. Minimize losses to wildlife habitat and improve the quality of fisheries.

PLANNED PROJECT

Land Treatment Measures

The land treatment program of establishing conservation practices on the land is a basic element in all watershed protection planning. The land treatment measures planned for this watershed are essential to accomplish the project goals. One of the project objectives, the reduction of erosion on cropland, can be accomplished only by the application of conservation land treatment measures. This watershed project calls for the installation and maintenance of proper land treatment measures that will adequately treat approximately 53,100 acres by individual land users with assistance from the Upper Delta Soil and Water Conservation District. The Soil Conservation Service and the Louisiana Forestry Commission in cooperation with the U.S. Forest Service will provide technical assistance in installing this land treatment program. The land treatment measures that will be installed and their functions are listed below:

Land Treatment Measures	Function
Bedding	Elevating the surface of flatland into a series of broad, low ridges separated by shallow parallel furrows, to provide improved surface drainage.
Chiseling and Subsoiling	Loosening the soil without inverting and with a minimum of mixing of the surface soil, to shatter restrictive layers below normal plow depth that inhibit water movement or root development.
Conservation Cropping System	Growing crops in combination with needed cultural and management measures, including the use of rotations that contain grasses and legumes to improve or maintain good physical condition of the soil; protect the soil from erosion; and help control weeds, insects, and diseases.
Crop Residue Management	Using plant residues to protect cultivated fields during critical erosion periods.
Drainage Field Ditch	Constructing open drainage ditches for collecting and removing of excess water within a field.

Land Treatment Measures	Function
Drainage Land Grading	Reshaping the surface of land needing drainage by grading to planned slopes to improve drainage, providing for more effective utilization of rainfall, and improving equipment operation and efficiency.
Drainage Mains and Laterals	Constructing open drainage ditches to a designed size and grade to remove surface water for maximum plant growth.
Land Smoothing	Removing irregularities on the land surface to improve surface drainage, to obtain more uniformity in planting and cultivating, and to improve equipment operation efficiency.
Minimum Tillage	Limiting the number of cultural operations to those that are properly timed and essential to produce crops, prevent soil damage, and at the same time, reduce the formation of tillage pans and improve soil aeration and tilth.
Pasture and Hayland Management	Properly using or treating pastureland and hayland to provide maximum livestock forage and to control erosion.
Pasture and Hayland Planting	Establishing and reestablishing long term stands of adapted species of perennial, biennial, or reseeding forage plants for livestock forage and for controlling erosion.
Structures for Water Control (Pipe Drops)	Using structures where the force of flowing water is sufficient to cause erosion. These structures provide a means of lowering the water from a higher elevation to a lower one in a short distance without causing erosion damage.

Land Treatment Measures	Function
Wildlife Wetland Habitat Management	Retaining, creating, and managing wetland habitat for wildlife to provide food and cover.
Wildlife Upland Habitat Management	Retaining, creating, or managing wildlife habitat other than wetland to provide food and cover.
Improved Cutting Practices	Harvesting and treating of forest stands to minimize disturbance, encourage growth of a new stand, and improve species composition.
Forest Land Management	Proper using and protecting of forest lands to provide increased wildlife, recreation, timber, and watershed benefits through multiple use.

Detailed soil surveys will be made by the Soil Conservation Service on approximately 95,800 acres which have not been surveyed in the watershed. The land capability class for each soil is determined. From these capability classes, the conservation measures which will adequately treat the land are determined. This information is used by the land user in consultation with the Soil Conservation Service to develop a comprehensive soil and water conservation plan. Adequately treated land is land used within its capabilities where the conservation practices that are essential to its protection and "planned" improvements have been applied. Providing necessary drainage and maintaining proper soil cover are the major problems in adequately treating land in the watershed. Conservation measures are installed in accordance with soil and water conservation plans based on the desires of the land user within the capabilities and limitations of the soil. Land treatment measures will be installed singly or in combination as set forth in these conservation plans.

Conservation measures to be applied on cropland include minimum tillage, conservation cropping system, crop residue management, drainage land grading, drainage field ditches, drainage mains and laterals, and structures for water control (pipe drops). Fifty-seven percent, or 21,800 acres, of the cropland will be adequately treated during the 10-year installation period. Some of the remaining 43 percent of cropland will have conservation measures installed, but not enough to be considered adequately treated.

Conservation measures to be applied on pastureland include pasture and hayland planting, pasture and hayland management, land smoothing, bedding, and surface drainage practices. These practices will adequately treat 9,700 acres of pasture.

Approximately 400 acres will be planted by landusers with assistance from the Soil Conservation Service to upland wildlife food and cover on open land. Plantings of suitable species such as Japanese or browntop millet, lespedeza, ryegrass, clover, corn, wheat, and others are planned for 1/2- to 5-acre plots at various locations in the watershed. Locations and development of these wildlife plantings will be made in cooperation with conservation plan development. These suitable species will provide food and habitat for waterfowl, quail, dove, deer, turkey, rabbit, and nongame wildlife.

Wildlife habitat will be maintained or preserved on 1,200 acres of forested wetland. Some 25 acres are planned for plantings of suitable species such as Japanese or browntop millet and corn that will provide food and habitat for waterfowl.

The Soil Conservation Service and the Louisiana Forestry Commission with the U.S. Forest Service, under the Cooperative Forest Management Program, will provide accelerated technical assistance for land treatment on 20,000 acres of forest land. This assistance will consist primarily of multiple-use forest management plan development and application to guide and direct land users in bringing their forest land to an acceptable level of forest management. Since many of the private land users already feel that their forest stands are valuable wildlife habitat, special efforts will be made to fully develop this resource along with the recreation and watershed protecting aspects of the forest.

Conservation land treatment is a voluntary action taken by individual land users. The Soil and Water Conservation District provides leadership in conservation programs in the watershed. Past experiences have shown that these land treatment measures do materialize. The establishment of adequate drainage outlets and systems will make it easier for land users to install and maintain other land treatment measures. The Agricultural Stabilization and Conservation Service administers programs that provide financial assistance for installing certain land treatment measures. Successful farming operations with sound conservation practices applied on all lands are incentives to other operators to follow these practices.

Structural Measures

Measures in this plan are comprehensive in nature, with full consideration given to the multiple-use concept of resource planning. The primary benefits that will accrue as a result of project installation will be from flood reduction and drainage. Minimizing damages to fish and wildlife while achieving these objectives is an important concern.

Structural measures consist of channel work which includes (1) excavation, (2) clearing, (3) grade stabilization structure, (4) structures for water control (weir and stop log weir), and (5) structures for water control (pipe drops). The channels were designed to prevent significant damages on agricultural land resulting from a storm with an average recurrence interval of 3 years. Because flooding of less than 24 hours duration does not result in significant damages to the crops grown in the watershed, the design flows are the estimated maximum 3-year 24-hour discharges. The effects of appurtenant structures were accounted for in the channel designs.

The soils in areas where channel excavation is planned have been logged based on the Unified Classification System, and samples taken. The samples were analyzed as to plasticity. All materials were classed as either CL or CH with the lowest plasticity index being a 14. Based on criteria for "Allowable Velocities for Unprotected Earth Channels"1/ material with this high of an index is stable when the velocity does not exceed 4 feet per second if the water carries a suspended load. Velocities of the water in the project channels range from a low "aged" velocity of .40 fps to a high "as built" velocity of 3.52 fps. All channels will be carrying a suspended load during periods of high flow.

Approximately 104 miles of channels are necessary to achieve project objectives in reducing flood damages and inadequate drainage. These channels will be referred to herein as "project channels." As shown on the Project Map, 22 miles will be cleared and 70 miles will be excavated. Ground cover and root armor will be left intact in channels which are cleared only. Twelve miles are adequate and require no work, but will be maintained.

Classification of the type of channel and flow characteristics of the project channels is shown on page II-14.

The length and area to be occupied by project channel rights-of-way are shown on the tabulation on page II-15. See the Project Map (Appendix E) for location of project channels.

Flow characteristics will remain the same after the project is installed except for the increase in ponded water created by the installation of structures for water control (weirs). The ponded water will be created in 6 miles of previously ephemeral flow. The types of channel and flow are defined in the coding system on page II-J-6, appendix J.

1/ United States Department of Agriculture, Soil Conservation Service, Engineering Division, Planning and Design of Open Channels, Technical Release No. 25, December 15, 1964.

Type of Channel	Length Project Channels	Length Requiring Work
	Miles	
Manmade or previously modified	89	77
Natural or previously unmodified	9	9
Nonexisting or no-defined channel	6	6
Total	104	92
Flow Characteristics		
Ephemeral	91	85
Intermittent	6	4
Ponded Water	7	3
Total	104	92

The structure for water control (stop log weir), figure 3, to be installed in Channel L-3 (Tiger Bayou) will assure that no change will occur in the duration or elevation of water levels that presently exist in Lake Clause. The design of this weir is such that the permanent water level of Lake Clause may be lowered seasonally for the purpose of managing the fish and wildlife resource. The two structures for water control (weirs), figure 7, will be installed at strategic points in Channel L-6 (one in the diversion and one in Bayou Tommy) to minimize damages to fish and wildlife habitat, reduce downstream sediment following construction, reduce growth of vegetation on the channel bottom during the dry season, and maintain aesthetics of the landscape. (See Project Map - Appendix B). These structures will be installed prior to any work being performed upstream from them and will create approximately 6 miles (16 surface acres) of additional ponded water. The planned crest elevation of the lower weir is approximately 1.5 feet higher than the existing bottom of Bayou Tommy at the point of diversion. Therefore, all flows less than 1.5 feet in depth will be forced through lower Bayou Tommy. The planned crest elevation of the upper weir is such that shallow water will be maintained in the undisturbed bottom of the bayou. These structures are considered temporary appurtenant measures to channel work.

Spoil from the channels will be stacked and smoothed in the forest areas and stacked or spread, as appropriate, in open areas. Short recesses for sediment interception will be excavated where needed at the junctions of principal laterals with the main channels.

As the channel work is being performed, berms will be maintained and spoil will be placed in a manner to allow maintenance equipment access to the channel. Channel crossings will be constructed where necessary for continuity of access. Some crossings will be provided

LENGTH AND AREA OCCUPIED BY PROJECT CHANNELS RIGHTS-OF-WAY

Choctaw Bayou Watershed, Louisiana

Channel Number	Excavation			Clear Only			Adequate		
	Length	Right-of-Way		Length	Right-of-Way		Length	Right-of-Way	
		Existing	Planned		Existing	Planned		Existing	Planned
	miles	acres		miles	acres		miles	acres	
L-2	1.3	18.8	19.2	2.2	32.8	38.1	1.0	5.1	9.9
L-2A	-	-	-	-	-	-	0.5	1.7	3.9
L-2A-1	2.9	9.2	21.4	0.3	1.1	2.8	-	-	-
L-2D	1.5	3.0	9.2	0.4	1.1	3.4	-	-	-
L-3	1.7	8.7	20.8	4.4	56.1	65.5	-	-	-
L-3A	1.5	3.9	10.9	5.0	38.9	61.6	-	-	-
L-3A-1	0.5	1.7	3.7	1.4	5.4	13.5	-	-	-
L-3A-1A	0.9	2.3	5.9	-	-	-	-	-	-
L-3A-3	0.8	1.8	5.5	-	-	-	-	-	-
L-3A-4	0.3	0.4	1.9	-	-	-	0.6	1.7	4.4
L-3A-5	0.7	1.2	4.5	-	-	-	0.3	0.7	2.1
L-3A-6	0.9	0.9	5.3	-	-	-	-	-	-
L-3A-7	0.8	1.8	6.3	-	-	-	-	-	-
L-3B	1.4	5.3	8.3	-	-	-	-	-	-
L-3B-1	0.5	0.0	3.2	-	-	-	-	-	-
L-3C	0.8	2.0	5.0	-	-	-	-	-	-
L-3D	1.6	4.3	13.2	-	-	-	-	-	-
L-3E	0.2	1.1	2.3	-	-	-	0.3	2.2	3.7
L-3F	4.9	19.4	40.6	-	-	-	-	-	-
L-4	5.3	50.3	64.7	1.6	20.4	23.1	2.6	35.1	39.7
L-4A	6.0	34.2	51.9	0.3	1.1	2.9	0.5	2.5	4.8
L-4B	2.9	12.2	25.4	-	-	-	1.1	10.3	10.3
L-4D	0.5	1.1	3.8	-	-	-	-	-	-
L-4E	1.2	4.7	8.7	-	-	-	-	-	-
L-4E-1	0.6	3.7	4.9	-	-	-	-	-	-
L-5	-	-	-	-	-	-	2.5	37.8	37.8
L-5A	-	-	-	-	-	-	0.4	5.9	5.9
L-5A-1	-	-	-	-	-	-	1.0	8.5	8.5
L-6	9.4	67.5	127.0	-	-	-	-	-	-
L-6A	3.2	13.2	26.7	2.3	16.8	26.7	-	-	-
L-6A-1	-	-	-	0.9	3.1	8.9	0.3	1.2	2.5
L-6A-2	1.7	9.6	12.8	-	-	-	-	-	-
L-6B	0.7	5.0	6.1	0.3	2.3	3.3	-	-	-
L-6C	0.5	0.5	3.5	-	-	-	-	-	-
L-6D	1.3	3.4	8.2	-	-	-	-	-	-
L-6D-1	0.6	1.4	3.4	-	-	-	-	-	-
L-7	-	-	-	1.7	17.4	20.9	0.2	2.8	2.8
L-7A	1.0	2.3	6.3	0.9	7.1	8.5	0.3	2.7	2.7
L-7B	2.5	1.8	20.0	-	-	-	-	-	-
L-7B-1	0.6	0.9	4.2	-	-	-	-	-	-
L-9	3.4	12.3	29.8	-	-	-	-	-	-
L-9A	1.3	9.4	11.8	0.4	3.3	4.1	0.4	2.8	4.5
L-10	0.4	0.0	2.8	-	-	-	-	-	-
L-11	3.3	21.2	32.0	-	-	-	-	-	-
L-11A	0.8	2.0	4.9	-	-	-	-	-	-
TOTAL	70.4	342.5	646.1	22.1	206.9	283.3	12.0	121.0	143.5

by special construction of structures for water control (pipe drops). Figure 1 shows a typical profile and cross section of a channel.

The grade stabilization structure shown in figure 4 is considered an integral part of channel work. It is to be installed in Channel L-9 at a point where excessive velocities and associated damages would occur due to a change in grade.

Figure 2 shows a typical structure for water control (pipe drops). These structures will be installed to prevent erosion and thus protect the channel from excessive sedimentation, reduce maintenance costs, and insure proper functioning of the channels. They are located on the smaller laterals entering project channels. These structures are considered appurtenant measures to channel work.

Project channels will be dug from one side, with consideration given to providing the most effective shade for channel water during the summer months. Channel excavation procedures are illustrated by figures 5 and 6 (appendix F). Spoil will be placed in the vicinity of trees that are left standing in the rights-of-way. The spoil will be placed in a manner that will not kill the trees.

Approximately 1,072 acres of rights-of-way will be disturbed because of channel work. Approximately 670 acres are occupied by existing channels, berms, and spoil. Therefore, approximately 402 acres of additional rights-of-way will be needed to install the project measures of this watershed. This 402-acre increase is comprised of 246 acres of open land, 50 acres of wooded channel banks, and 106 acres of forest. Several alternatives for establishing vegetative cover on the disturbed areas were evaluated by the Louisiana Wild Life and Fisheries Commission, U.S. Fish and Wildlife Service, and Soil Conservation Service. Due consideration was given to providing the most expedient method of reestablishing vegetation to prevent erosion and to provide food and cover for wildlife. The most practical approach would be to establish a ground cover and plant hardwood seedlings where applicable.

Vegetation will be established on rights-of-way and disturbed areas along project channels after heavy or plant-destroying equipment has ceased traveling on the berm. Depending on the season of the year, the crops being grown, and desires of the Sponsors, spreading of the spoil may or may not be accomplished soon after construction. Spoil that cannot be spread within 90 days after construction due to weather will be stacked, shaped, and seeded. Spoil in forest will be stacked, shaped, and seeded. Depending upon soil type and season of the year, species such as the following can be used - Common bermudagrass, Pensacola bahiagrass, Common lespedeza, Sericea lespedeza, browntop millet, ryegrass, and fescue.

Alteration, modification, or reconstruction of some existing facilities such as bridges, culverts, and pipeline crossings will be necessary to insure proper functioning of planned structural measures. The work on the bridges involves the enlargement of the channel cross section by excavating under the bridge in order to widen the channel. Work on the culverts involves replacing existing culverts with larger ones, lengthening existing culverts, or lowering the grade of existing culverts. Work on the pipeline crossings involves the lowering or raising or existing pipelines. No bridges, culverts, or pipelines will be relocated.

This alteration, modification, reconstruction, or replacement includes, but is not limited to, 5 culverts on State and Federal highways, 34 bridges and 45 culverts on parish and private roads, 20 private pipeline crossings, and 2 railroad culverts. The work will be done concurrently with channel construction. The specific locations of existing facilities to be altered are shown on the design profiles and cross sections in the working files. Replacement of any State or Federal highway bridge or culvert will be coordinated with the Louisiana Highway Department will be in accordance with current standards for traffic and type of highway. Structural measure installations are expected to be completed in a 5-year period. There are no relocations of residences or businesses required.

The disposal of all clearing wastes and construction debris will be accomplished by burying, burning, or removal from the construction site. Burying will limit smoke pollution caused by burning. Burning operations, if necessary, shall be conducted in accordance with the Louisiana Air Control Commission regulations and other applicable laws governing such operations. Noise levels will be monitored and standards of the Occupational Safety and Health Act will be followed.

All construction equipment will be properly equipped with noise resonators. Because of the type of work to be performed, this equipment will be widely dispersed throughout the watershed, rather than concentrated at any one location. Equipment will not be permitted to work when conditions are such that satisfactory control of soil erosion, water pollution, air pollution, or noise pollution cannot be accomplished.

The following specific measures will be used to eliminate or minimize adverse effects to the plant, animal, and aquatic resources:

1. Excavation in forest land will be limited to the side of the channel with the poorest quality habitat with consideration given to providing the most shade possible to the ponded water channels.

2. The enlargement of Channel L-6 from the point of diversion upstream to near the Texas and Pacific Railroad will be performed differently from other channel work. This work will be done in such a manner that one side of the channel and the existing bottom will not be disturbed except at one weir location and road crossings. Refer to the drawing on page II-19 for an illustration of this specific measure.

3. Excavation in forest land habitat will be minimized.

4. Selected trees will be left on the berms and channel banks for aesthetic and wildlife purposes (see figures 5 and 6 - appendix F.)

5. Areas disturbed by construction will be revegetated with a ground cover and planted with seedlings beneficial to wildlife species.

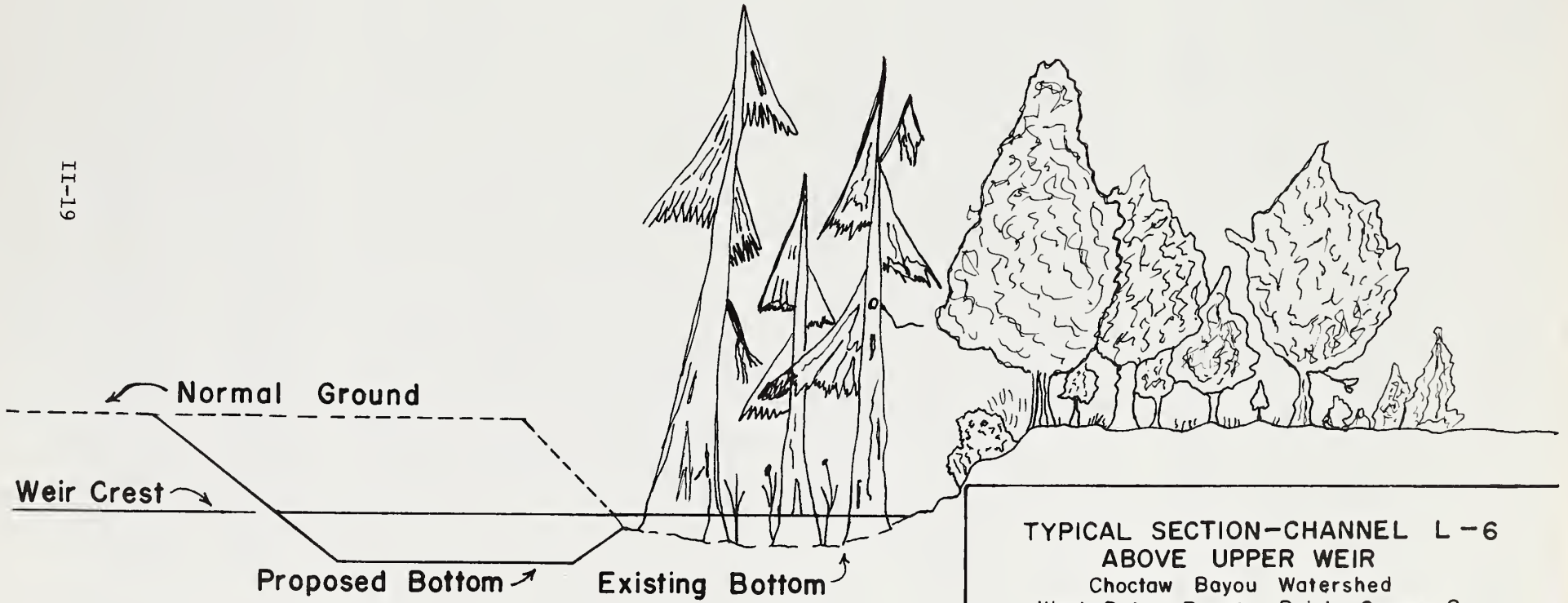
6. A structure for water control (stop log weir) will be installed prior to upstream channel work in Channel L-3, the outlet for Lake Clause, to maintain normal water levels in the lake.

7. Structures for water control (weirs) will be installed prior to any upstream work on Channel L-6 and its tributaries.

8. The planned crest elevation of the lower weir in Channel L-6 will insure that low flows will continue through the undisturbed portion of Bayou Tommy downstream from the point of diversion.

A summary of the changes reveals that there are at the present time 670 acres of land in the watershed taken up by the project channel rights-of-way which will increase to 1,072 acres with the project. The following data summarizes the preceding discussion:

Land Use	Present Acres Channel R.O.W.	Project Acres Channel R.O.W.	Additional Acres Channel R.O.W.
Open Land	284	530	246
Wooded Channel Banks	213	263	50
Forest Land	173	279	106
Total	670	1,072	402



TYPICAL SECTION–CHANNEL L–6
ABOVE UPPER WEIR
Choctaw Bayou Watershed
West Baton Rouge, Pointe Coupee &
Iberville Parishes, Louisiana
U. S. Department of Agriculture
SOIL CONSERVATION SERVICE
Alexandria, Louisiana

There will be an overall increase in the "other land" category because of additional right-of-way requirements coming from open land and forest land (see Land Use tabulation on Page II-82). However, since wooded channel banks and existing channels, berms, and spoil are already in the "other land" category, increase will not occur because this is a change within the same land use.

There are no properties listed in the National Register of Historic Places that will be affected by the installation of structural measures.

Should any archaeological or historical sites be discovered during and as a result of the installation of structural measures, construction that would disturb the sites will be stopped. The Secretary of the Interior (National Park Service), the Curator of Anthropology, Louisiana State University and the Historical Preservation Officer from the State Art, Historical and Cultural Preservation Agency will be notified and given an opportunity to evaluate the sites and make recommendations for salvage or mitigation before construction continues. Since this is a federally assisted local project, there will be no change in the existing responsibilities of any Federal agency under Executive Order 11593 with respect to archaeological and historical resources.

Operation and Maintenance

Operation and maintenance of all phases of the completed project will be the responsibility of the Sponsoring Local Organization. The Upper Delta Soil and Water Conservation District, with technical assistance from the Soil Conservation Service, will assist and encourage land users to maintain land treatment measures. The objectives will be to maintain adequate drainage, ground cover, and other practices which will protect and conserve soil and water resources. The Louisiana Forestry Commission, in cooperation with the U.S. Forest Service, will furnish the technical assistance necessary for operating and maintaining the forest land treatment measures under the going Cooperative Forest Management Program. Land treatment is an integral part of watershed protection and these conservation measures must be adequately maintained to realize full project benefits.

Operation and maintenance of all phases of the completed structural measures will be the responsibility of the West Baton Rouge and the Pointe Coupee Parish Police Juries. Each police jury will have the responsibility for operating and maintaining works in their respective areas except, in addition, Pointe Coupee Parish Police Jury will be responsible for the proper functioning of the structure for water control on Channel L-6 in West Baton Rouge Parish. The U.S. Fish and Wildlife Service will be allowed

to monitor the effects of construction related to Channel L-6. The West Baton Rouge Parish Police Jury, in cooperation with the Louisiana Wild Life and Fisheries Commission, will operate and maintain the structure for water control to be located in Channel L-3, downstream from Lake Clause. In addition to maintaining the 92 miles of project channels with appurtenant structures to be worked, they will continue to maintain the flow capacities of those project channels within the benefit area that are now adequate (5 miles) as indicated in the Project Map - Appendix B. The methodical operation and maintenance of structural measures will insure proper functioning of these measures and realization of benefits.

Annual operation and maintenance expenses for the 92 miles of project channels, including equipment cost, are estimated to be $43,500. The annual cost for West Baton Rouge Parish is $22,900 and for Pointe Coupee is $20,600. The estimated cost for maintaining the 5 miles of adequate channels downstream from the benefit area is $3,200 in West Baton Rouge Parish. West Baton Rouge Parish will incur this total cost and will maintain these channels at adequate capacity. None of these channels are in Pointe Coupee Parish.

Channel maintenance includes periodic cleanouts necessary to restore channels to their planned capacities, repair of bank erosion, control of vegetation, and repair or replacement of appurtenant structures. Maintenance of structures for water control includes repairing rills around headwalls or wingwalls, replacing rock riprap as needed, maintaining or replacing vegetation on fills, repairing worn or broken parts, replacing short-life parts, and all other activities essential to the safety and functioning of the structures. The aesthetics of the channel and structure sites shall be an important consideration of the maintenance program.

Existing public roads, farm roads, turn rows, trails, open areas, and other existing facilities will be used by maintenance equipment to reach the channels. Sufficient access will be available to properly maintain all channels. The channels will be kept clear of excessive vegetation by mowing, hand labor, and use of approved herbicides. The herbicides will be used in areas where mowing and hand labor are not practical. Spraying will be accomplished in the summer months when the ephemeral channels and the intermittent channels are most likely to have the least flow. Spraying during these months will lower the probability of runoff carrying undegraded herbicides into other areas. Eroded banks, side inlets, and other appurtenances will be repaired when necessary. Localized sediment accumulations in channels, with and without weirs, will be removed periodically by mechanical means.

Vegetation remaining on channel banks not disturbed during construction will be maintained. Trees left in channel rights-of-way for landscape purposes and those planted on spoil banks in the forest areas will not be destroyed by maintenance methods.

Two complete mechanical cleanouts are anticipated during the life of the project. The amount of sediment to be removed each time will be small enough to be placed and smoothed on the channel berm.

Provisions will be made for representatives of the Soil Conservation Service, the Louisiana Department of Public Works, and the Sponsors to have free access to all portions of the project measures at any reasonable time for the purpose of inspection, repair, and maintenance. The Sponsors, together with representatives of the Soil Conservation Service, will make a joint inspection annually, after severe storms, and after the occurrence of any other unusual condition that might adversely affect the structural measures.

These joint inspections will continue for 3 years following installation of the structural measures. Inspections after the third year will be made by the Sponsors. They will prepare an annual report and send a copy to the Soil Conservation Service. Items of inspection will include, but will not be limited to, (1) conditions of vegetative cover and growth, (2) need for removal of sediment bars and debris accumulations, (3) brush control in channels, (4) structures for water control (pipe drops and weirs), (5) the grade stabilization structure, and (6) general conditions.

The Sponsoring Local Organization fully understands its obligation for operation and maintenance and will execute a specific operation and maintenance agreement with the Soil Conservation Service prior to the execution of the project agreement for the installation of project measures. The operation and maintenance agreement will include specific provisions for retention and disposal of property acquired or improved with Public Law 566 financial assistance. (See an example of this type of agreement, appendix D.)

The present maintenance tax for drainage is considered adequate for maintaining channels and associated works. Should these funds prove inadequate, the Sponsors have agreed to provide additional financing by an increase in revenue from normal taxing procedures.

Project Costs

The total installation cost of the project is estimated to be $5,609,500. The following tabulation displays the distribution of these costs:

Distribution of Project Installation Cost

Cost Items	Funds ($) P.L. 566	Other	Total
Land Treatment			
Conservation Measures	--	2,856,400	2,856,400
Technical Assistance	385,500	96,400	481,900
Structural Measures	1,156,870	1,114,330	2,271,200
Total Project Installation Cost	1,542,370	4,067,130	5,609,500

ENVIRONMENTAL SETTING

Physical Resources

The Choctaw Bayou Watershed comprises 110,000 acres of river bottom land in south central Louisiana. The northeastern boundary is the mainline levee of the Mississippi River; the southeastern boundary is the bank of the Morgan City-Port Allen route of the Introccastal Waterway; and the remainder of the boundary is the drainage divide between Choctaw Bayou and Bayou Grosse Tete. The land slopes gently downward from the natural levees along the northeastern and northwestern portions of the boundary to the level backswamp deposits in the vicinity of Bayou Cholpe and Choctaw Bayou. The watershed is in the Lower Mississippi Water Resource Region.

Port Allen (population about 5,900), the only incorporated town situated entirely within the watershed, is on the Mississippi River opposite Baton Rouge. A portion of Livonia (population 611) is on U.S. Highway 190 in the westernmost extension of the watershed, and Erwinville is near the center of the watershed.

Three major highways, Interstate 10, U.S. 190, and Louisiana 1, and a network of farm-to-market roads serve the watershed. Two railroads and the port at Baton Rouge provide shipment facilities.

The average annual rainfall at Baton Rouge is approximately 58 inches. The average temperature is 68 degrees Fahrenheit.1/ The average frost-free period of 253 days extends from March 8 to November 16.2/

The topography is generally flat, ranging from nearly level to very gently sloping; only a small amount of the area has slopes exceeding 1 percent. Most of the land lies between elevations 10 and 35 feet mean sea level. Variations in the generally flat surface result from old scour channels and natural levees along present streams and abandoned river channels.

Historically, the watershed has been flooded each time the Mississippi River reached flood stage. Over the years, a system of levees has been constructed to prevent major floods by the river.

1/ U.S. Department of Commerce, Environmental Data Service, Climatological Data - Louisiana - Annual Summary 1974, Vol. 79, No. 13 (Asheville: National Oceanic and Atmospheric Administration, 1975), pp. 1, 4.

2/ U.S. Department of Agriculture, Climate and Man - 1941 Yearbook of Agriculture (Washington: U.S. Government Printing Office, 1941), pp. 900-901.

Under existing conditions, approximately 35,000 acres or 65 percent of the cropland and pastureland, is in need of flood protection and drainage. The remaining cropland and pastureland has adequate natural drainage, or land that has already been provided with adequate drainage systems.

The alluvial soils of this watershed are high in natural fertility. The surface horizons of most are neutral to alkaline in soil reaction. Organic matter content is low in all of the soils in cultivation. Nitrogen fertilizer must be applied for all nonleguminous crops. Legumes are well adapted to these soils which have high contents of exchangeable calcium and magnesium.

The photograph on page II-29 show a typical section of the loamy natural levee being used for row crops.

As a basis for conservation planning, the soils of the watershed are grouped in accordance with the soil capability classification. Of the eight capability classes of soils, those suitable for cultivation (Classes I, II, III, and IV) are grouped according to their potentials and limitations for sustained production of cultivated crops and pasture plants. Soils not suitable for cultivation (Class V in this watershed) are grouped according to their potentials and limitations for production of native plants and forest vegetation. Class I soils have very few limitations, a wide range of agricultural uses, and the least risk of damage. The other capability classes have soils with progressively greater natural limitations. Capability Class II soils have some limitations, such as wetness, but those are not severe. Capability Class III denotes soils with severe limitations that reduce the choice of plants and/or require special conservation practices. Capability Class IV soils have very severe limitations and are marginal for cropland. The Capability Subclass designation "w" shows that water in or on the soil is the primary limitation. 3/

The principal soil associations occurring within the watershed are shown on the general soil map on page II-28. These associations are Commerce-Mhoon, Sharkey, Convent, Sharkey-Tunica, and Sharkey-Swamp.

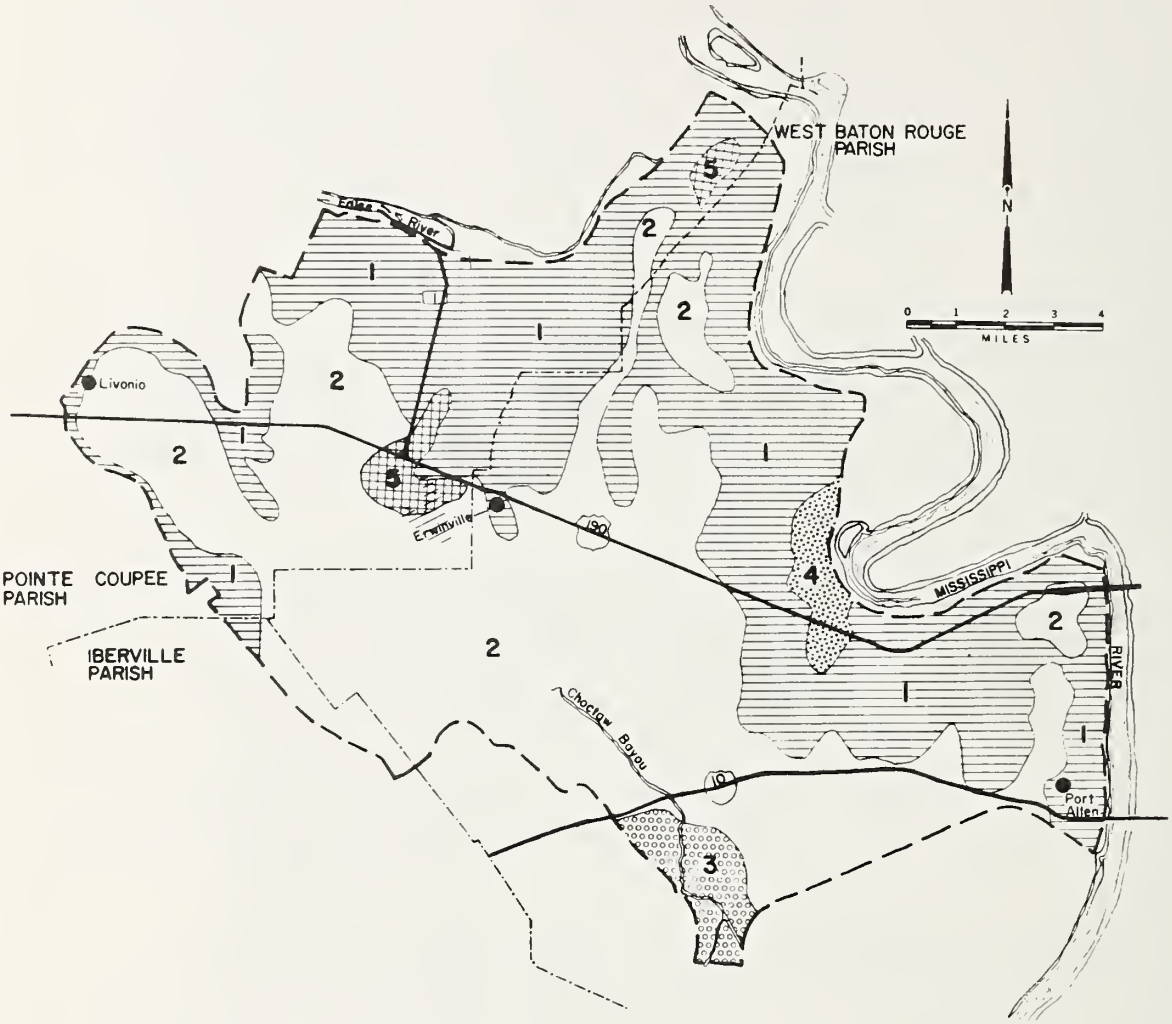
3/ U.S. Department of Agriculture, Soil Conservation Service, Land Capability Classification, Agriculture Handbook No. 210 (Washington: U.S. Government Printing Office, 1971), pp. 6-11.

The Commerce-Mhoon association comprises about 41 percent of the watershed and is composed of nearly level, loamy soils on the natural levees of the Mississippi River and its distributaries. These soils are found at the highest elevations in the watershed. They are used mostly for cropland and pasture. The somewhat poorly drained Commerce soils make up the majority of the association and occur at the higher elevations. The Commerce and Mhoon soils are in Capability Subclass IIw. They have silt loam surfaces and silty clay loam subsoils. These soils are fairly easy to work; however, plow pans form easily. Drainage is generally needed. Land leveling will improve drainage and increase the efficiency of farm equipment. Variable depth plowing, chiseling, or subsoiling will help eliminate plow pans. Other minor soils found in the Commerce-Mhoon association are Convent, Vacherie, and Sharkey soils. The soils of the Commerce-Mhoon association are the most productive soils in the watershed for cultivated crops and pasture plants. With sound conservation measures applied, present technology and high-level management, these soils can sustain production of annual yields of 40 bushels of soybeans, 900 pounds of lint cotton, 35 tons of sugarcane, and 95 bushels of corn per acre. Improved pastures on these soils can provide over 9 animal-unit months of high quality grazing per acre per year. The photograph on page II-29 shows a high quality improved pasture of white clover, dallisgrass, and common bermudagrass on a Commerce soil.

The dominant soils in the watershed are those of the Sharkey association, which make up about 53 percent of the area. This association consists of level and nearly level, poorly drained, clayey soils on broad flats adjacent to the natural levees. These soils are used mostly for pasture and forest, with some areas in soybeans. The Sharkey soils are the dominant soils in this association, and are generally clayey throughout. They are in Capability Subclass IIIw. These soils are moderately well suited to most cultivated crops and pasture plants commonly grown in the area. Wetness is generally a limiting factor and drainage is needed. These soils are difficult to work and crop roots do not penetrate readily. Wide cracks form and crops may suffer from lack of moisture during dry periods. Commerce, Mhoon, and Tunica soils make up a minor portion of this association. Soils of the Sharkey association have a high potential for production of soybeans and sugarcane if adequate drainage is provided. Estimated average yields per acre with sound conservation measures, present technology, and high-level management include 35 bushels of soybeans, 30 tons of sugarcane, 60 bushels of corn, and 130 bushels of rice. Improved pastures with warm-season perennial species can provide over 7.5 animal-unit months of high quality forage per acre per year on soils with adequate drainage. These clayey soils planted to fescue can provide 9 animal-unit months of high quality forage per acre per year.

GENERAL SOIL ASSOCIATIONS

- 1. Commerce-Mhoon Association
- 2. Sharkey Association
- 3. Sharkey-Swamp Association
- 4. Convent Association
- 5. Sharkey-Tunica Association



General Soil Map
CHOCTAW BAYOU WATERSHED
U.S. Department of Agriculture
Soil Conservation Service

Compiled from SCS General Soil Map
of West Baton Rouge, Pointe Coupee,
and Iberville Parishes, Louisiana.

February 1976



A typical section of the loamy natural levee being used for row crops



A high quality pasture of white clover, dallisgrass, and Common bermudagrass under high management on a Commerce soil

The Convent association comprises about 2 percent of the watershed. These soils are on the natural levees of the Mississippi River. They are somewhat poorly drained and are in Capability Subclass IIw. Some areas are undulating with short, irregular slopes. Most of this acreage is in cropland and drainage is needed. The irregular and uneven surface makes land grading or land smoothing a highly desirable practice. These soils have potential production very similar to the soils of the Commerce-Mhoon association and are well suited to most cultivated crops and pasture plants that are grown in this area. These soils develop compact layers (traffic pans) easily. However, they can be broken up by deep plowing or chiseling.

The Sharkey-Tunica association makes up about 2 percent of the watershed. These poorly drained, undulating clayey soils are on short irregular slopes in a ridge and swale pattern. These soils are in Capability Subclass IIIw and are used for pasture and forest. Drainage of swales is essential for good pasture production.

The Sharkey-Swamp association consists of level to depressed clayey soils that are subject to frequent flooding. These soils, used primarily for forest, comprise about 2 percent of the watershed. The Sharkey soils of this association are in Capability Subclass Vw and are not suitable for cropland in most years because of flooding. A small portion of this association is made up of nearly continuously-flooded swamp. The soils in Capability Subclass VIIw have surface layers of muck, or soft clays, underlain by soft and firm gray clays. These swamp soils provide excellent natural wildlife habitat.

Erosion at the present time amounts to approximately 223,000 tons a year from sheet erosion. While some roadside and streambank erosion exists, it is considered negligible. There is approximately 56,000 tons of sediment delivered to the watershed boundary each year which was derived from sheet erosion.

Water samples have been collected from Choctaw Bayou, Lake Clause, and Bayou Tommy. The concentrations of suspended sediment found in the samples are given in the tabulation on page II-43.

The present topography of the watershed reflects physiographic changes that have occurred during the past 2,000 years. During Stage 4/ (approximately 2,000 years ago), the Mississippi River

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4/ Harold N. Fisk, Geological Investigations of the Alluvial Valley of the Lower Mississippi River, Mississippi River Commission, Vicksburg, Mississippi, 1944.

occupied what is now Bayou Teche and the Yazoo River occupied an area presently occupied by Bayou Grosse Tete. Approximately 1,500 years ago, the Mississippi River occupied its present channel and Bayou Grosse Tete became a diversionary of the Mississippi River. The present natural levee of Bayou Grosse Tete reflects its origin as being from a river much smaller than the Mississippi.

The small area which is the most westerly portion of the watershed drained by Bayou Tommy, represents the effects of constricting drainage by sediment deposited during floods. The area is within a bend of the high-banked Bayou Grosse Tete. The drainage from the area has been restricted by crevasse-type deposits.

Choctaw Bayou is representative of the normal drainage within a restricted backswamp area.

The surface of the area is underlain by a complex series of southerly dipping, interfingering, clay, silt, sand, and gravel deposits. Freshwater-bearing sediments range in age from Miocene to Recent and dip at the rate of about 50 feet per mile in the southern part of Pointe Coupee Parish. Water from the Miocene becomes salty near the southern limits of the watershed. This abrupt change from fresh to salty water is probably due to a lack of flushing action in this area. The coarse sands and gravels of the alluvial aquifer are the first permeable deposits encountered when drilling. Water levels in this aquifer fluctuate with the stages of the Mississippi River. Wells are capable of producing in excess of 4,000 gpm. Water from this aquifer is moderately to very hard, calcium bicarbonate-type water that contains iron in excess of the recommended limits. Deeper aquifers produce softer waters.

The City of Port Allen obtains municipal water from three wells screened in the Pliocene. The following is a chemical analysis of the water from one of these wells:

5/ J. L. Snider, M.D. Winner, Jr., and J.B. Epstein, Ground Water for Louisiana's Public Supplies, Louisiana Department of Public Works, Baton Rouge, Louisiana, 1962. Data on number of wells revised due to more recent data.

WELL WBR-35 6/
(Date of Collection: March 13, 1959)
(Results in parts per million except as indicated)

Silica (SiO_2)	29	Dissolved solids:	
Iron (Fe) a/	.04	Calculated (Sum)	206
Iron (Fe) b/	.18	Residue on evaporation at 180°C	206
Manganese (Mn)	.1	Hardness as $CaCO_3$	0
Calcium (Ca)	0	Noncarbonate hardness	0
Magnesium (Mg)	0	Percent Sodium	99
Sodium (Na)	74	Specific Conductance	
Potassium (K)	.8	(Micromhos at 25°C)	298
Bicarbonate (HCO_3)	174	Color c/	40
Carbonate (CO_3)	0	Carbon Dioxide (CO_2), Calculated d/	1.7
Sulfate (SO_4)	11	pH (Lab.)	8.2
Chloride (Cl)	4.3	Temperature (°F)	80
Fluoride (F)	.5		
Nitrate (NO_3)	.1		
Phosphate (PO_4)	0		
Boron (B)	.05		

a/ In solution at time of analysis
b/ Total amount of iron in sample; presumably in solution when collected
c/ Not in parts per million
d/ Data made available at a later date

The Tepetate - Baton Rouge Fault Zone, part of the Red River Fault Zone, crosses the watershed. This fault zone has influenced water as well as oil and gas production.

Oil, gas, and clay are produced in Pointe Coupee and West Baton Rouge Parishes. The value of this mineral production amounted to $31,162,000 in 1970 and to $29,427,000 in 1971 for Pointe Coupee Parish and $2,603,000 in 1970 for West Baton Rouge Parish. Value of 1971 production was withheld to avoid disclosing company confidential data.7/

6/ Ibid.

7/ James R. Bobo and Dean A. Dudley. Statistical Abstract of Louisiana, 4th ed. New Orleans: Division of Business and Econonic Research, College of Business Administration, Louisiana State University at New Orleans, 1971

Before farming became prominent in the watershed area, the ground cover was forest land. The natural drainage system consisted of a pattern of bayous and wide, shallow natural depressions. As the demand for food and fiber generated more interest in farming, a drainage improvement program was initiated which included enlarging and clearing of these natural depressions. Most of the channels that comprise the present drainage system have previously been dug, and in many cases, more than once. The geometric configuration and alignment of the water courses have been altered. Cleaning of these channels for the past 50 years has resulted in the present outlet system of manmade "drainage ditches."

The entire drainage system flows in a southerly direction. The major outlet is Choctaw Bayou, which drains into the Gulf Intracoastal Waterway, Morgan City-Port Allen Alternate Route, which is a man-made waterway. This borrow channel flows southeast to the Lower Grand River, which flows southeast to a complex of interconnecting channels and lakes including Lake Veret, Belle River, Lake Palourde, Bayou Boeuf, Bayou Shaffer, Lower Atchafalaya River, and to the Atchafalaya Bay, into the Gulf of Mexico.

An inventory of the existing drainage system was made to determine the type of channels and flow characteristics. The inventory showed that 94 percent by length is manmade or previously modified; 6 percent is in a natural, unmodified condition. Eighty-seven percent has ephemeral flow characteristics, 4 percent has intermittent flow, and 9 percent has ponded water. There are no project channels that are perennial streams.

Forest land acreages (45,600) are the largest in the watershed, followed by cropland and pastureland. The vegetative plant community in the forest land is composed of mixed bottom land hardwood species. Overstory vegetation in the community includes baldcypress, water oak, willow oak, overcup oak, sweetgum, green ash, hickory, red maple, bitter pecan, American elm, willow, sycamore, cottonwood, hackberry, and tupelogum. Understory vegetation in the bottom land hardwood plant community includes trumpetcreeper, box elder, swamp dogwood, elderberry, Virginia creeper, honeysuckle, dewberry, greenbrier, rattan, buttonbush, deciduous holly, hawthorn, switchcane, swamp privet, and reproduction from the overstory species. The present hydrologic condition of the forest soils is very poor.

The vegetative plant community in the open land is composed of 53,400 acres of cropland and pastureland. Cropland comprises 38,400 acres of this total. Major crops grown in this area are sugarcane, soybeans, corn, grain sorghum, wheat, and cotton. Pastureland comprises 15,000 acres in the watershed. Plants grown in

pastures include Common bermudagrass, carpetgrass, bahiagrass, fescue, white clover, wheat, and ryegrass. Vegetation in other areas such as fallow fields include ragweed, asters, goatweed, Johnsongrass, sesbania, broomsedge, verbenia, foxtail, various panic, and paspalum species.

There are 10 ponds and 1 lake with a total surface area of 182 acres in the watershed. Lake Clause, which has approximately 20 surface acres of water, is the only named lake that appears on quadrangle maps published by the U.S. Geological Survey. Most of the ponds are used for multiple purpose use, which includes livestock water and fish production.

The Louisiana Stream Control Commission has described portions of interstate streams, coastal waters, and streams discharging into coastal waters in the State according to present use. The Commission has also established navigable tributaries and water bodies. "The quality criteria for waters of Louisiana are based on their present and potential uses and the existing water quality indicated in data accumulated through monitoring programs of various agencies. 8/ Choctaw Bayou is the only stream classified by the Louisiana Stream Control Commission that is in the watershed. General and specific criteria for water quality of Choctaw Bayou as set forth by the Louisiana Stream Control Commission are presented in appendix I.

Wetlands, as defined in USDI Circular 39,9/, comprise 1,782 acres. Of this total, 1,200 acres are Type 1 wetlands (seasonally flooded basins or flats) located near Bayou Tommy, 182 acres are Type 5 wetlands (inland open freshwater) scattered throughout the watershed, 140 acres are Type 6 wetlands (shrub swamps) located in and around Lake Clause and 260 acres are Type 7 (wooded swamps) located around Lake Clause. The following tabulation provides a summary of the wetland data:

8/ State of Louisiana, Louisiana Stream Control Commission, State of Louisiana Water Quality Criteria 1973, p. 5.

9/ U.S. Department of the Interior, Fish and Wildlife Service, Wetlands of the United States, Circular No. 39 (Washington: U.S. Government Printing Office, 1956), pp. 20-22.

Type	Description	No. of Acres
1	Seasonally flooded basin or flats	1,200
5	Inland open freshwater	182
6	Shrub swamps	140
7	Wooded swamps	260
Total		1,782

Present and Projected Population

The watershed population is about 16,400, with about 5,900 of these residing in Port Allen and the remainder in the rural areas. There are numerous other small communities scattered throughout the watershed. New Roads (population 4,000) is about 6 miles north of the watershed, and Plaquemine (population 9,000) is about 6 miles southeast of the area. Baton Rouge, the State Capital with a population of about 166,000 is to the east, immediately across the Mississippi River.

Data obtained from the 1970 Census of Population revealed that Pointe Coupee, Iberville, and West Baton Rouge Parishes had a population of 69,600. Of this total, 36,600 (53 percent) were white, and 33,000 (47 percent) nonwhite.10/

The projected 1990 population for the above-mentioned parishes11/ is expected to be about 83,600, of which 48,600 (58 percent) will be white and 35,000 (42 percent) will be nonwhite. This indicates that the expected 1990 population will be about 14,000 persons higher than the 1970 population. About 12,000 of these will be white and 2,000 will be nonwhite.

10/ James R. Bobo and Jesse M. Charlton, Jr., Statistical Abstract of Louisiana (4th ed., New Orleans: Division of Business and Economic Research, College of Business Administration, Louisiana State University at New Orleans, 1971.

11/ Georgios C. Christou and Harris S. Segal, Population Projections to 1980 and 1990 Louisiana and Its Parishes, Research Study No. 18, Division of Business and Economic Research, College of Business Administration, Louisiana State University in New Orleans, (Baton Rouge, Louisiana, 1973).

Based on Pointe Coupee Parish data it is estimated that 56 percent of the families in the watershed had income below the poverty level according to the 1970 Census. This would represent a total of 8,500 individuals. Approximately two-thirds of these people or about 5,500 are of minority races.

Economic Resources

There are three broad categories of industries in the economy of any region: (1) basic industries such as farming, mining, and forestry, which are based on natural resources; (2) processing industries, such as grain elevators, petroleum refining plants, and lumber mills, which depend on the basic industries; and (3) service industries, such as wholesale and retail stores, communications, transportation, medicine, etc., which are based on the other two industries as well as their own members.12/

A significant part of the economy of the watershed is based on agriculture. Crop production, the most important sector of agriculture, is followed by pasture and forestry. The major farm and ranch enterprises are sugarcane, soybeans, corn, grain sorghum, wheat, cotton, and pasture. Pulpwood and sawlogs are the main forest products grown. Agricultural-related industries include grain elevators, fertilizers, mixing plants, agricultural flying services, pulpwood loading yards, sawmills, tractor and equipment dealers, and others. Most of these are located in nearby towns.

Estimates based on the 1973 Census of Population indicate that the labor forces in Pointe Coupee, Iberville, and West Baton Rouge Parishes were about 6,100, 8,900, and 5,000, respectively. Of these, about 10.7, 9.3, and 8.7 percent, respectively, were unemployed. An average of three parishes involved reveals that employment in agriculture, forestry, and fisheries was about 9 percent; mining, about 3 percent; construction, about 15 percent; manufacturing, about 17 percent; and the remaining 56 percent in other sectors of the economy. The median family income ranges between about $4,957 and $6,920.

Approximately 52 percent of the rural population in Pointe Coupee Parish or about 8,200 people are of minority groups. About 1,100 are farm and 7,100 are rural nonfarm residents. The median years of school completed by these groups is 6.5 years. This is considered typical for the watershed.

12/ Gerald A. Doeksen, Robert E. Daugherty, and Charles H. Little, "Multiplier Effects of Agriculture and Other Industries," OSU Extension Facts, Science Agriculture No. 808 (Stillwater: Oklahoma State University), pp. 808-808.1.

The number of farms is decreasing and the size is increasing. The following data from the 1969 Census of Agriculture showing farms grouped by size for Pointe Coupee, Iberville, and West Baton Rouge Parishes exemplify this:

	Pointe Coupee		Iberville		West Baton Rouge	
	1964	1969	1964	1969	1964	1969
Farm Size	No.	No.	No.	No.	No.	No.
Under 50 acres	469	274	138	62	111	34
50 to 99 acres	246	209	49	51	35	33
100 to 179 acres	118	102	57	43	20	27
180 to 259 acres	51	58	37	30	4	17
260 to 499 acres	69	81	29	50	6	6
500 and over	88	87	49	50	17	24
Total	1,041	811	359	286	193	141

Sugarcane and soybeans are the two principal crops grown in the area, followed by corn, grain sorghum, wheat, and cotton. The average FUTURE WITHOUT PROJECT yields per acre on problem area soils are expected to be about 33 tons of sugarcane, 33.1 bushels of soybeans, 45.2 bushels of corn, 31.3 hundredweights of grain sorghum, 28.7 bushels of wheat, and 474 pounds of lint cotton.

From 1960 to 1970, soybean acres increased from 300 acres to 46,000 acres in Pointe Coupee, Iberville, and West Baton Rouge Parishes. This resulted in the reduction of forest land as well as land in other agricultural uses.

Data from the 1969 Census of Agriculture indicated that approximately 214 farms were in the watershed averaging about 325 acres per farm. Over 50 percent of these farms are family type and distributed throughout the watershed.

Of the 45,600 acres of forest land within the watershed, about 15,000 acres, or 33 percent, are industrially owned or managed. About 1 percent, or 640 acres, is owned by the West Baton Rouge Parish School Board, and the remaining 29,900 acres, or 66 percent, are scattered, small ownerships averaging less than 150 acres of forest per farm. Much of the area is accessible only by logging roads. There is extreme difficulty with construction of logging roads due to wet conditions.

Most of the forest has been repeatedly cut over with little regard for future timber production. The cutting practices have resulted in stands composed of trees of low-quality and inferior species.

Land values for agricultural purposes range from an estimated $500 to $1,000 per acre. These values depend on location, soil type, and degree of conservation measures applied. Urban land values range from $1,500 to $5,000 per acre. There are 1,527 acres of public lands in the watershed administered by the West Baton Rouge Parish School Board.

The watershed is generally bisected by U.S. Highway 190. State and parish secondary roads radiate from this highway providing easy access to farms and markets. A major railroad parallels U.S. Highway 190.

The watershed is within the Lower Mississippi Region Comprehensive Study Area and the Atchafalaya River Basin Study Area. The plan is compatible with the objectives of the studies. Pointe Coupee Parish is designated as eligible for assistance under the Public Works and Economic Development Act of 1965.

Plant and Animal Resources

The major pond fisheries include Lake Clause, farm ponds, and borrow pits, which have a moderate fishery value. These 11 bodies of water total 182 surface acres of water. Fish species in the ponds and lake include catfish, bullhead, buffalo, bream, crappie, and bass. False River Lake, a 3,200-acre oxbow lake of the Mississippi River, is located just north of the project boundary. It has a high fishery value with a standing crop of 349 pounds of fish per acre according to fish population samples taken by the Louisiana Wild Life and Fisheries Commission in the summer of 1971.13/

Choctaw Bayou, Bayou Cholpe, Stumpy Bayou, Tiger Bayou, and Bayou Poydras provide the major channel fisheries. Fish species in these channels include freshwater drum, catfish, bullhead, carp, buffalo, gar, shad, bream, bass, and crappie. Choctaw Bayou, Bayou Cholpe, and Stumpy Bayou are not project channels.

Choctaw Bayou is the outlet for the project. It has intermittent flow conditions for about 7 miles in the project area. The average width of Choctaw Bayou is 120 feet and it has about 100 surface

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13/ Unpublished fish sampling data, Louisiana Wild Life and Fisheries Commission.

acres. Choctaw Bayou has a diversified fish population, including 37 species, with a standing crop of approximately 250 pounds of fish per acre. See page II-38 for a list of fish that occur.

Bayou Cholpe has intermittent flow in the lower 4 miles. It averages about 60 feet wide and has approximately 30 surface acres. Bayou Cholpe has a standing crop of 213 pounds of fish per acre.14/ Game fish includes only 20 pounds of fish per acre, or 9 percent of this total weight. Commercial species comprised the majority of the fisheries with 133 pounds per acre, or 63 percent of the standing crop. The remaining 60 pounds, or 28 percent, consisted of forage fish. Refer to fish population data on the following page.

Tiger Bayou has intermittent flow for 8 miles. It averages 25 feet wide and has about 25 surface acres. It has an estimated standing crop similar to Bayou Cholpe in the lower reaches.

Stumpy Bayou and Bayou Poydras have ephemeral flow with ponded water in the lower reaches. They have about 6 miles of ponded water for a total of 20 surface acres. Fish population in Bayou Paydras has a similar standing crop to Bayou Cholpe, but with a higher percentage of game fish since it has better habitat conditions. Stumpy Bayou has a similar standing crop and species composition as Bayou Cholpe. Other ephemeral channels, such as Bayou Tommy, provide a limited fishery because of lack of water except during periods of runoff. However, these channels provide important food chain organisms, such as crustaceans, larval insects, and minnows. There are no known "threatened" fish species found in the watershed.15/ However, a paddlefish was collected in the watershed. This species was formerly abundant in the streams of the Mississippi Valley, but populations have been reduced due to possible overexploitation or environmental changes.16/

The tabulation on page II-43 exhibits water quality data for Choctaw Bayou Watershed.

14/ Unpublished fish population data from the Louisiana Wild Life and Fisheries Commission, 1975.

15/ Robert R. Miller, "Threatened Fishes of the United States," Transactions of American Fisheries Society, No. 2 (Kansas: Allen Press, 1972), pp. 239-252.

16/ Neil H. Douglas, Freshwater Fishes of Louisiana, (Baton Rouge: Claitor's Publishing Division, 1974), p. 42.

FISH POPULATION DATA BAYOU CHOLPE[a/]
CHOCTAW BAYOU WATERSHED, LOUISIANA

Species	Fish of Available Size: Minimum Length	Number/ Acre	Pounds/ Acre	Intermediate: Range in Length	Number/ Acre	Pounds/ Acre	Fingerlings: Maximum Length	Number/ Acre	Pounds/ Acre	Total Pounds/ Acre	Percent Total Pounds
PREDATORY GAME FISH											
Largemouth bass	9.0	1.2	1.5	5.0-8.9	-	-	4.9	-	-	1.5	0.70
White crappie	7.0	4.9	1.5	5.0-6.9	-	-	4.9	-	-	1.5	.70
Black crappie	7.0	8.6	3.6	5.0-6.9	-	-	4.9	-	-	3.6	1.69
Total		14.7	6.6		-	-				6.6	
NONPREDATORY GAME FISH											
Bluegill	5.0	18.5	2.7	3.0-4.9	14.8	1.0	2.9	16	.25	3.95	1.85
Longear sunfish	5.0	3.7	.25	3.0-4.9	2.5	Trace	2.9	-	-	.25	.11
Redear sunfish	5.0	1.2	.25	3.0-4.9	-	-	2.9	-	-	.25	.11
Spotted sunfish	5.0	2.5	.50	3.0-4.9	-	-	2.9	-	-	.50	.23
Green sunfish	5.0	7.4	1.3	3.0-4.9	.5	Trace	2.9	-	-	1.3	.61
Warmouth	5.0	40.6	6.3	3.0-4.9	17.2	.75	2.9	-	-	7.05	3.31
Total		73.9	11.30		35.0	1.75		16	.25	13.30	
NONPREDATORY FOOD FISH											
Carp	14.0	8.6	16.6	7.0-13.9	1.3	1.0	6.9	-	-	17.60	8.26
Drum	10.0	11.1	9.0	5.0- 9.9	77.5	14.6	4.9	22.1	.9	24.50	11.51
Smallmouth buffalo	16.0	-	-	5.0-15.9	25.8	21.3	4.9	-	-	21.3	10.00
Largemouth buffalo	16.0	1.2	2.7	5.0-15.9	-	-	4.9	-	-	2.7	1.26
Black buffalo	16.0	-	-	5.0-15.9	5.0	5.2	4.9	-	-	5.2	2.44
Striped mullet	10.0	3.7	2.6	5.0- 9.9	-	-	4.9	-	-	2.6	1.22
Paddlefish	12.0	1.23	2.46	5.0-11.9	-	-	4.9	-	-	2.46	1.15
Yellowbullhead	7.0	4.9	1.7	5.0- 6.9	-	-	4.9	-	-	1.7	.79
Total		30.73	35.06		109.60	42.10		22.1	.9	78.06	
PREDATORY FOOD FISH											
Channel catfish	10.0	36.9	27.7	5.0- 9.9	143.9	16.0	4.9	161.1	1.62	45.32	21.29
Blue catfish	10.0	3.4	2.6	5.0- 9.9	39.4	1.5	4.9	41.8	.5	4.6	2.16
Flathead catfish	10.0	-	-	5.0- 9.9	-	-	4.9	1.0	Trace	-	-
Longnose gar	26.0	1.2	1.6	7.0-25.9	-	-	6.9	-	-	1.6	.75
Spotted gar	24.0	1.2	1.5	7.0-23.9	-	-	6.9	-	-	1.5	.70
Bowfin	14.0	1.2	2.0	5.0-13.9	-	-	4.9	-	-	2.0	.93
Total		43.9	35.4		183.3	17.5		203.9	2.12	55.02	
FORAGE FISH											
Gizzard shad	8.0	61.5	53.3	4.0- 7.9	157.5	2.8	3.9	-	-	56.10	26.35
Threadfin shad	-	-	-	4.0- 5.9	115.6	2.0	3.9	54.1	.6	2.6	1.22
Miscellaneous minnows	-	-	-	4.0- 5.9	-	-	3.9	31.9	.3	.3	.14
Mooneye	8.0	2.46	.86	4.0- 5.9	-	-	3.9	-	-	.86	
Total		63.96	54.16		273.1	4.8		86.0	.9	59.86	
Total Standing Crop= 212.84 lbs/acre											

a/ Data developed by Louisiana Wild Life and Fisheries Commission from a .77-acre set, expanded to 1 acre. on May 14-15, 1975.

FISH OCCURRING IN WATERSHED

Choctaw Bayou Watershed, Louisiana

Threadfin shad	Dorosoma petenense
Gizzard shad	Dorosoma cepedianum
Brook silversides	Labidesthes sicculus
Golden shiner	Notemigonus crysoleucas
Mooneye	Hiodon tergisus
Bluegill	Lepomis macrochirus
Redear sunfish	Lepomis microlophus
Green sunfish	Lepomis cyanellus
Longear sunfish	Lepomis megalotis
Warmouth	Lepomis gulosus
Spotted sunfish	Lepomis punctatus
White crappie	Pomoxis annularis
Black crappie	Pomoxis nigromaculatus
Largemouth bass	Micropterus salmoides
Longnose gar	Lepisosteus osseus
Spotted gar	Lepisosteus oculatus
Bowfin	Amia calva
Channel catfish	Ictalurus punctatus
Blue catfish	Ictalurus furcatus
Yellow bullhead	Ictalurus natalis
Black bullhead	Ictalurus melas
Paddlefish	Polydon spathula
Tadpole madtom	Noturus gyrinus
Pirate perch	Aphredoderus sayanus
Bigmouth buffalo	Ictiobus cyprinellus
Smallmouth buffalo	Ictiobus bubalus
Black buffalo	Ictiobus niger
Carp	Cyprinus carpio
American eel	Anguilla rostrata
Flathead catfish	Pylodictis olivaris
Striped mullet	Mugil cephalus
Redfin pickerel	Esox americanus
Chain pickerel	Esox niger
Mosquitofish	Gambusia affinis
Sailfin molly	Poccilia latipinna
Flier	Centrarchus macropterus
Shortnose gar	Lepisosteus platostomus

WATER QUALITY DATA - 1975

Choctaw Bayou Watershed, Louisiana

Parameters	Sample Date	Station No. 1[a]	Station No. 2[b]	Station No. 3[c]
Color (True) Units	2/18/75	30	95	60
	3/24/75	42	63	38
	4/22/75	45	50	30
	5/14/75	35	60	25
	6/12/75	58	40	75
	6/24/75	22	40	35
Hardness (mg/l) as ($CaCO_3$)	2/18/75	200	260	262
	3/24/75	186	160	240
	4/22/75	152	132	240
	5/14/75	140	106	246
	6/12/75	80	162	112
	6/24/75	180	120	292
Nitrogen, Ammonia (mg/l) (N)	2/18/75	0.10	0.22	0.0
	3/24/75	.4	.75	.50
	4/22/75	.25	.35	.50
	5/14/75	.28	.75	.45
	6/12/75	.65	.60	.30
	6/24/75	.40	.40	.90
Nitrogen, Nitrate (mg/l) (N)	2/18/75	0.80	0.60	0.30
	3/24/75	1.0	.20	.40
	4/22/75	.85	.15	.40
	5/14/75	.15	.10	.25
	6/12/75	.45	.15	.35
	6/24/75	.10	.20	.20
Oxygen (mg/l) (O_2)	2/18/75	6	3	7
	3/24/75	6	3	9
	4/22/75	7	4	6
	5/14/75	7	3	4
	6/12/75	5	3	5
	6/24/75	9	3	3
pH (units)	2/18/75	8	7.5	8
	3/24/75	8	6.7	8.5
	4/22/75	7.8	6.8	7.5
	5/14/75	8.7	6.7	7.3
	6/12/75	7.0	6.7	6.7
	6/24/75	8.0	7.0	7.7
Phosphate, Ortho (mg/l) (PO_4)	2/18/75	0.28	0.70	0.53
	3/24/75	.38	1.45	1.13
	4/22/75	.35	.80	.32
	5/14/75	.30	.88	.30
	6/12/75	.72	.82	.93
	6/24/75	.32	.95	.28
Sulfate (mg/l) (SO_4)	2/18/75	32	12	28
	3/24/75	33	25	22
	4/22/75	18	20	18
	5/14/75	13	16	19
	6/12/75	15	18	3
	6/24/75	21	15	13
Sulfide (mg/l) (S)	2/18/75	0.0	0.0	0.04
	3/24/75	.0	.0	.0
	4/22/75	.0	.0	.01
	5/14/75	.0	.0	.0
	6/12/75	.0	.0	.0
	6/24/75	.0	.0	.0
Suspended Solids (mg/l)	2/18/75	55	5	2
	3/24/75	60	5	2
	4/22/75	20	5	5
	5/14/75	20	10	18
	6/12/75	120	2	80
	6/24/75	18	0	5
Temperature °F	2/18/75	66	68	72
	3/24/75	70	70	74
	4/22/75	72	71	72
	5/14/75	77	72	72
	6/12/75	81	82	85
	6/24/75	84	83	85
Turbidity (FTU's)	2/18/75	65	25	25
	3/24/75	105	45	20
	4/22/75	50	35	18
	5/14/75	42	40	32
	6/12/75	165	40	130
	6/24/75	38	8	18

a/ Choctaw Bayou at Interstate 10 bridge

b/ Lake Clause

c/ Bayou Tommy on parish road 2 1/2 miles south of Highway 190

Access is limited to most road crossings as there are no public boat launching ramps in the project area. Residents of Iberville, Pointe Coupee, and West Baton Rouge Parishes bought 8,399 fishing licenses during the 1970-71 season.17/ The fisheries of the watershed are utilized by some local fishermen.

The tabulation on the following page exhibits water quality data for Choctaw Bayou Watershed.

The four habitat types important for wildlife that occur in the project area are forest land, open land, wooded channel banks, and wetland areas.

Forest land habitat comprises 45,600 acres in the watershed. Vegetation within this ecosystem consists of bottom land hardwoods which provide the most productive wildlife habitat in the watershed. Forest game species inhabiting the forest land are white-tailed deer, gray squirrels, fox squirrels, swamp rabbits, cottontail rabbits, woodcock, waterfowl, wild turkeys, and black bear. Forest land also provides valuable habitat for many nongame animal species that serve important ecological functions.

Examples of mammals, birds, reptiles, and amphibians occurring in the watershed include the following species grouped according to categories:

1. Mammals - white-tailed deer, gray squirrel, fox squirrel, cottontail rabbit, swamp rabbit, otter, raccoon, bobcat, coyote, opposum, mink, nutria, striped skunk, black bear, armadillo, gray fox, red fox, shorttail shrew, red bat, cotton rat, and white-footed mouse.

2. Birds - mourning dove, bobwhite quail, woodcock, wild turkey, mallard, wood duck, blue-winged teal, pileated woodpecker, red-headed woodpecker, yellow-billed cuckoo, brown thrasher, robin, mockingbird, Eastern meadowlark, blue jay, belted kingfisher, common crow, barred owl, killdeer, red-tailed hawk, red-shouldered hawk, common egret, Louisiana heron, green heron, and white-throated sparrow.

3. Amphibians - Southern leopard frog, bullfrog, green tree frog, spring peeper, Fowler's toad, Southern cricket frog, three-toed amphuima, marbled salamander, dwarf salamander, Eastern narrow-mouthed toad, central newt, and small-mouthed salamander.

17/ State of Louisiana, Louisiana Wild Life and Fisheries Commission, 14th Biennial Report 1970-71 (New Orleans: Louisiana Wild Life and Fisheries Commission, 1972), p. 28.

4. Reptiles - green anole, five-lined skink, broad-headed skink, Southern fence lizard, common snapping turtle, smooth softshell turtle, red-eared turtle, American alligator, Western cottonmouth, cane brake rattlesnake, Southern copperhead, diamond-back water snake, speckled king snake, Eastern hognose snake, Eastern garter snake, and gray rat snake.

Open land habitat totals 53,400 acres and includes pastureland and cropland. Cropland comprises 38,400 acres of this area with pastureland occupying the remaining 15,000 acres. Open land provides primary habitat for bobwhite quail, mourning dove, cottontail rabbit, waterfowl, snipe, and other wildlife species. Agricultural fields provide feeding areas for many species of wildlife such as quail, doves, and rabbits. Some wildlife species use more than one habitat type, such as cottontail rabbits and waterfowl. Wooded channel banks which occur in narrow strips along channels in open land provide 214 acres of habitat. These wooded channel banks provide cover and nesting areas for open land wildlife species. The tabulation on the following page gives the estimated populations of game species in the project area.

Wetland areas provide 1,782 acres of wildlife habitat in the watershed. The different wetland types with a brief description and the amount of acreage of each are discussed on page II-36. Wetlands provide important habitat for waterfowl, furbearers, amphibians, reptiles, and other wildlife species. Waterfowl utilize wetlands extensively for feeding, roosting, and brooding areas. Other values of wetlands generally include the recharge of ground water, the stabilization of runoff, the reduction or prevention of erosion, the production of timber, the creation of firebreaks, and serve as outdoor classrooms for students studying ecology.

Lake Clause is a valuable wetland area that is present in the watershed. Three major wetland types, based upon U.S. Department of the Interior classification in Circular 39 were identified in relation to Lake Clause. These wetlands included 20 acres of Type 5 (inland open freshwater), 140 acres of Type 6 (shrub swamps), and 260 acres of Type 7 (wooded swamps). Wood ducks utilize the numerous cypress trees with cavities in them in these wetlands for nesting purposes. The buttonwood shrubs provide excellent brood habitat for wood ducks which also feed on the seeds of these plants. Acorn-producing trees such as water oak, willow oak, and other species, provide mast as an important food source for resident ducks and other wildlife. Also, migratory species such as mallards and teal utilize these wetlands for roosting and feeding areas. Wading birds, shorebirds, and numerous other avian species depend upon this wetland ecosystem for habitat. Large numbers of white

CURRENT ESTIMATED POPULATIONS OF GAME SPECIES
Choctaw Bayou Watershed, Louisiana a/

Species	Habitat Type	Acres	Number Per Acre(s)	Total In Watershed
Dove b/	Open land	53,400	1/3	17,800
Quail c/	Open land	53,400	1/20	2,670
Woodcock b/	Open land and Forest land	99,000	1/10	9,900
Squirrel c/	Forest land	45,600	1/2	22,800
Deer c/	Forest land	45,600	1/20	2,280
Rabbit c/	Open land and Forest land	99,000	1/10	9,900
Waterfowl (Resident)	Water areas, Forest land, & Open land	99,182	1/150	660
Waterfowl (Migratory) b/	Water areas, Forest land, & Open land	99,182	1/15	6,610
Wild Turkey d/	Forest land	45,600	1/200	230
Black bear d/	Forest land	45,600	e/	

a/ Data developed in cooperation with Louisiana Wild Life and Fisheries Commission.

b/ Dove, woodcock, and waterfowl (migratory) peak populations vary due to migratory nature with highest populations during the fall and winter months.

c/ Quail, squirrel, deer, and rabbit are at or near carrying capacity under the present land use.

d/ Wild turkey and black bear populations are below carrying capacity.

e/ Exact population data not available.

ibises, and cattle and great egrets are using the area around Lake Clause as a rookery site. Some anhingas were observed in the area, but it was not determined whether or not they were nesting in this area. These aquatic environments also provide essential habitat requirements for reptiles, amphibians, and furbearers.

The wildlife resources are well utilized in the project area. Residents of Iberville, Pointe Coupee, and West Baton Rouge Parishes purchased 8,552 basic small game hunting licenses and 3,853 big game licenses for the 1970-71 hunting season. 18/

The American alligator is found in the project and is on the "List of Endangered Fauna." 19/ In September, 1975 the alligator was removed from endangered status in Calsasieu, Cameron and Vermilion Parishes and a controlled hunting season has been established in order to thin excessive populations of alligators in these parishes. The Southern bald eagle may be an occasional winter visitor to the watershed. The Florida panther and Bachman's warbler are "endangered" species that have not been recently sighted in the watershed, but may possibly occur since excellent habitat is present for these two species. The black bear, while not an endangered species, is an uncommon mammal that occurs in the project area.

There are no known "threatened" plants listed for the watershed according to available literature.

Recreation Resources

A 1974 inventory conducted by the Louisiana State Parks and Recreation Commission lists 41 recreation sites for Pointe Coupee Parish and 10 for West Baton Rouge Parish. Only three of these are located in the watershed. These consist of one community center, one motor vehicle raceway, and one named hunting club.

18/ State of Louisiana, Louisiana Wild Life and Fisheries Commission, 14th Biennial Report 1970-71 (New Orleans: Louisiana Wild Life and Fisheries Commission, 1972), p. 27.

19/ U.S. Department of the Interior, Fish and Wildlife Service, United States List of Endangered Fauna (Washington: U.S. Government Printing Office, 1974).

There are 10 ponds and 1 named lake in the watershed with a combined surface area of 182 acres. The lower reaches of Choctaw Bayou and Bayous Cholpe, Stumpy, Tiger, and Poydras provide some fishing opportunity, but the recreation use of these streams and the lakes and ponds is severely restricted by the lack of access. There are no public boat launching ramps within the area.

Nonwater-based recreational areas are also very limited. There are no community parks or recreation areas of significance.

Archaeological, Historical, and Unique Scenic Resources

The Curator of Anthropology and the Louisiana Historic Preservation Officer have been contacted concerning known archaeological and historical sites within the watershed. The National Register of Historical Places was also reviewed. Three known archaeological and historical sites are on record within the watershed.

The Soil Conservation Service entered into a contract with Louisiana State University to conduct a survey in order to determine the existence of any archaeological or historical sites that would be affected by installation of structural measures.

The archaeological investigations whithin the entitled study area were accomplished in two phases. Phase I consisted of archival research in which historical documents, maps, previous archaeological records and aerial mosaics were examined. The Louisiana Department of Art, Historical and Cultural Preservation was also consulted and no National Register sites or sites proposed from the National Register will be affected by the proposed structural measures.

The second phase of the investigations, between August 18th and October 26, 1975 consisted of a field survey conducted by Robert W. Neuman, Curator of Anthrolopology, Louisiana State University along all the proposed routes of the specified projects in the watershed. No archaeological deposits were located that will be affected by the structural measures.

Soil, Water, and Plant Management Status

Soybeans became a popular crop in the watershed about 10 years ago. Soybean acreage in Pointe Coupee, Iberville, and West Baton Rouge Parishes has increased each year from about 300 acres in 1960 to about 46,000 acres in 1970. This increase has caused a reduction in forest land as well as land in other agricultural uses. Between 1962 and 1970, about 45,600 acres of forest land was cleared in Pointe Coupee, Iberville, and West Baton Rouge Parishes. During the last 10 years (1965-1975), an estimated 7,000 acres of forest land was cleared in the watershed.

The forest land on the watershed, except for the 15,000 acres of industrial ownership and management, is in a relatively unmanaged condition. There have been no formal forest management plans prepared except for industrially-owned or managed land, for the forested area of the watershed.

Pastureland comprises 14 percent of the watershed. This is expected to remain about the same in the future.

Cropland will increase in the future at the expense of forest land. Use of cropland will intensify after the project is installed.

"Other land" will increase about 5,100 acres. Large-scale industrial development on 2,600 acres is unlikely. Urban and built-up will increase 400 acres. The remaining 2,100 acres will be onfarm miscellaneous uses.

The watershed is in the Upper Delta Soil and Water Conservation District and the Lower Delta Soil and Water Conservation District. There are 166 farms covering 33,594 acres which have basic soil and water conservation plans and 61 other farms with 25,281 acres which have received assistance from the district. These farms represent about 54 percent of the area. An estimated 10 percent of the needed conservation measures have been applied with district assistance at a total estimated cost of $608,100. This land treatment was applied on the problem and nonproblem areas.

The Soil Conservation Service district conservationist works closely with the soil and water conservation districts in establishing priorities of work to be done. Various methods are used to promote sound conservation in the area. These methods include radio, television, and newsletters.

A clerk-typist is employed by one district and two part-time clerks and an aid are employed by the other district to assist Soil Conservation Service field office personnel with the overall conservation program.

The Louisiana Forestry Commission, through the various Federal-State cooperative forestry programs, is providing forest management assistance, distribution of planting stock, and forest pest control assistance to private land users in the watershed.

Projects of Other Agencies

The U.S. Army Corps of Engineers has completed 92 percent of their planned project consisting of approximately 33 miles of channel work on Choctaw Bayou and Tributaries. The remaining 8 percent of work is scheduled to be completed by March 1976. This Corps project provides the outlet for Choctaw Bayou Watershed.

Choctaw Bayou outlets into the Gulf Intracoastal Waterway, Morgan City-Port Allen Alternate Route, a Federal navigation project.

U.S. Army Corps of Engineers' projects that protect the watershed from Mississippi River floodwaters are the West Bank Mississippi River Levee and the lower guide levee of the Morganza floodway.

The State of Louisiana, Department of Public Works, under its State-parish drainage improvement program, has previously installed a system of channels. Due to subsequent changes in land use and normal deterioration, most of the channels are no longer adequate to provide the needed protection. This does not include the aforementioned Corps' project.

WATER AND RELATED LAND RESOURCE PROBLEMS

Land and Water Management

The soils of this watershed have inherent problems associated with wetness and drainage. Economical use of the land for agricultural purposes generally required attention to these problems of excess surface water and improvement of soil wetness characteristics.

Three distinct problems can be identified with soil wetness in use of these alluvial soils. Frequency, intensity, and distribution of precipitation is one factor to consider in the soil wetness problem. Rainy periods of several days associated with the passage of weather fronts create large amounts of excess water for short periods. Assuming a maximum storage capacity in the rooting zone of about 6 inches for most of these soils, an excess of approximately 12 inches of rainfall above potential evapotranspiration occurs during the months of January through May.1/

The second problem associated with wetness of these alluvial soils concerns topography. Slopes are gradual, usually less than 1 percent, and relief throughout the watershed is small. The loamy, natural levees along stream channels exhibit the most slope and surface runoff is toward the lower, clayey areas between channels. Elevations of these broad, nearly level areas are not much above existing outlets. Gradients are not extreme and water can stand on these broad lows for long periods. In addition to this broad drainage problem, micro-relief on these alluvial surfaces impedes surface drainage and creates micro-lows for water to stand in for long periods. The natural processes of alluvial deposition created these small differences in relief throughout the alluvium. Broad, clayey flats have these features which cause large amounts of water to be trapped on the surface after every rain. The top photograph on page II-55 shows the effect of these features on soybean growth on Sharkey clay. A poor stand and stunted plants are present in the low wet areas of this field.

The heterogeneous nature of layers in these alluvial soils is the third contributor to soil wetness that can be identified. Permeability of the alluvial material in the upper 5 feet is generally slow. Differences in permeability and percolation rates of soil layers and the common occurrence of thin layers of very slowly permeable clayey layers result in zones of saturation and perched

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1/ Robert A. Muller, Application of Thornthwaite Water Balance Components for Regional Environmental Inventory. Publications In Climatology. 1972 Vol. 25 No. 2, pp. 1-33.

water tables in these soils. Lateral movement of water in these soils is generally not continuous to outlets. Duration of perched water tables and zones of near saturation range from a few hours after each rainfall to periods of 6 months.

These three conditions contribute to the problem of soil wetness, which in turn, creates problems in use and management of these alluvial soils for agriculture. Soil wetness delays land preparation, planting, and harvest of cultivated crops. Excess moisture at planting can reduce stands of cotton, corn, and soybeans. Excess soil moisture during early stages of growth results in shallow rooted crops that readily suffer from moisture stress after the soil dries. Short periods of moisture deficit occur during the months of June through September in 4 out of 10 years.2/

Additional problems created by soil wetness include ineffective weed control because of delayed cultivation practices or loss of herbicide effectiveness. Many adverse effects result from soil wetness. Poor soil aeration is the main effect of soil wetness that influences plant growth and yield. Restricting effective rooting depth, increasing susceptibility to compaction, and delaying soil warm-up in the spring, are also adverse effects of soil wetness.

The clayey alluvial soils are difficult to work because of the narrow range of optimum moisture conditions. These clays are hard when dry and sticky when wet. Good tilth is difficult to maintain. The silty soils develop compact layers as a result of machinery and animal traffic. These "hard pans" reduce water percolation through the soil and limit root penetration.

Several problems are associated with the production of sugarcane on these soils. Management of cane residue to provide adequate soil cover for erosion control is one problem. Sugarcane has a potential for very high residue production. The weight of cane leaves and tops after removal of the stalks can be approximately 9 tons per acre from a 30-ton yield of sugarcane.3/ However, all this material produced by the sugarcane plant does not become crop residue. Most of the cane leaves are removed by burning during the harvest operation. Nearly all of the cane tops cut by mechanical harvesters are deposited on the soil surface after cutting. Approximately

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2/ C. H. M. Van Bavel, Drought and Water Surplus in Agricultural Soils of the Lower Mississippi Valley Area. 1959 USDA Technical Bulletin 1209, pp. 21, 40, 85.

3/ Unpublished data developed by Billy J. Cochran, Agricultural Engineering Department, Louisiana State University.

3 to 15 percent of the vegetative material is removed from the field with the stalks. Sugarcane residue consists almost entirely of plant tops. These vegetative parts do not provide as much soil surface cover in proportion to their weight as does cotton and soybean residue. The sugarcane residue is unevenly distributed over the soil surface resulting in a portion of the field without adequate cover through winter and early spring. The lower photograph on page II-55 shows the distribution of residue on two out of every three rows after a conventional three-row lap type harvest. Residue samples taken in March at this location showed an average of 3.2 tons per acre of cane residue remaining on this field. However, one-third of the rows had approximately 2 tons per acre of residue. This did not provide adequate cover and protection from soil erosion for one-third of the soil surface.

Fallow plowing to control Johnsongrass creates a problem from soil erosion. A conventional 4-year rotation of sugarcane includes 1-year of fallow. There are no herbicides presently available that will effectively control Johnsongrass during this operation. Frequent plowing of this fallow soil leaves the surface exposed for long periods to the frequent rains and large soil loss occurs from sheet erosion. The top photograph on page II-57 shows the exposed soil surface in early spring on a field that will remain fallow throughout the year. Approximately 4,900 acres of sugarcane land remains fallow each year in the watershed. Sediment yield from these level and nearly level soils can be high when the surface is not protected and the soil is frequently disturbed to prevent growth of vegetation.

Problems caused by conventional tillage operations on sugarcane, corn, and soybeans are apparent. Land preparation in the spring months for planting of soybeans leaves the soil surface with little cover during the months of March through June. Conventional tillage operations for fertilization and cultivation of sugarcane leave the major portion of the soil surface disturbed and without cover during this same period. The lower photograph on page II-57 shows a sugarcane field after tillage operations in mid-March. Studies of erosion have shown that approximately 75 percent of the soil loss and sediment yield occur during these spring months when conventional tillage operations disturb the soil.4/and 5/ High intensity rains occur during these periods. Infiltration rates

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4/ Ibid.

5/ Soil, Water, Air Sciences Research. United States Department of Agriculture, Agricultural Research Service, 1974, pp. 69-70.



A poor stand and stunted soybean plants are evident in the low wet areas of this Sharkey clay soil



Uneven distribution of residue on sugarcane leaves approximately one-third of the soil surface inadequately protected from erosion



Fallow plowing of land in a sugarcane rotation.



Soil loss occurs after conventional tillage operations on sugarcane



Overgrazing problems on unimproved pastures exist in the watershed

drop sharply on these silty soils without cover and runoff is high. The top photograph on page II-63 shows the sediment remaining in a channel adjacent to recently cultivated sugarcane fields.

Problems in maintenance of onfarm drainage systems are present. Drainage ditches must be cleared of sediment periodically to maintain adequate flow. Johnsongrass and other weeds not controlled on ditch banks reduce capacity of the channels and provide a source for infestation of the adjacent fields. The lower photograph on page II-63 shows a drainage ditch on sugarcane land that is less effective because of lack of maintenance.

Problems occur in use and management of soils in the watershed for pastures. Drainage systems are needed on these soils for maximum production of quality forage throughout the year. Reduced yields and quality of forage are common on pastures. Overgrazing is another problem that exists in the watershed. (Refer to photograph on the previous page.)

Floodwater Damages and Drainage Problems

Floodwater and drainage problems are inseparable on 34,300 acres of agricultural land. Land use consists of the following: sugarcane - 11,100 acres, soybeans - 9,800 acres, corn - 1,900 acres, cotton - 600 acres, grain sorghum 1,400 acres, and pasture - 9,700 acres. Flooding from storm runoff aggravates and prolongs wet soil conditions in the nearly level terrain. Drainage is defined as the removal of excess subsurface or surface water from high water tables or normal precipitation. Flood prevention is defined as the conveyance, control, and disposal of surface water caused by abnormally high direct precipitation or stream overflow. Because of the flatness of the watershed, the wetness of the soil, and high annual rainfall, water problems are closely interrelated. For instance, an abnormally high rain may occur which saturates the soil. Before soil moisture conditions are reduced sufficiently to allow work, a normal rainfall occurs which again saturates the soil and prolongs the excess moisture problem. Channels in the problem areas are not adequate to prevent frequent, direct damages from flooding or to allow onfarm drainage systems to function properly.

This watershed is served by an estimated 171 miles of channels, not including those in the U.S. Corps of Engineers' Project (Choctaw Bayou and Tributaries). This 171 miles of channels have been identified by the Sponsors as being inadequate to prevent drainage and flooding problems.



Sediment remaining in a channel adjacent to recently cultivated sugarcane field.



On-farm drainage ditches must be maintained to remain adequate.

Rainfall of at least 4.1 inches in a 48-hour period occurs on an average of two times a year, 5 inches once a year, and 6.7 inches once in 3 years. Total damages caused by floods with average recurrence intervals not exceeding 3 years are greater than the total damages caused by larger but less frequent floods. Damaging out-of-bank flows in portions of the area occur about two times yearly. Cropping season is defined as March 8 through November 16. This is the period of time when good drainage and flood prevention is essential for normal crop production.

Frequent out-of-bank flows cause farm operators to delay planting or to replant, and to use additional cultural practices in production and additional equipment and labor in harvesting. The quality and quantity of sugarcane, soybeans, corn, grain sorghum, wheat, and cotton are adversely affected when normal harvesting is delayed.

Land use changes from noncropland to cropland have occurred at a steady rate. An estimated 7,000 acres of forest land were cleared in the watershed during the 10 years between 1965 and 1975. The drainage systems on these lands are inadequate for efficient crop production. The increased runoff from this land overtaxes previously worked channels and causes problems on other lands.

Sugarcane will be used to illustrate flooding problems in the watershed because it is the main cash crop and most other farm enterprises are planned around its production. Sugarcane production is a continuous cycle of planting and harvesting, with multi-harvests resulting from one planting. This crop is unique in that adverse conditions that affect it when planted could become manifest in the yields obtained several years later. The most important single factor contributing to a better stand of cane is adequate drainage.

A new crop of sugarcane is started in the late summer or fall of the year when the plant cane or seed cane is placed lengthwise at about a 4-inch depth in an 18-inch high row. Under good drainage conditions, this cane will sprout, producing a shoot that will depend upon the plant cane for nourishment until it can grow roots of its own. When a killing frost occurs, the above ground growth that has taken place since the cane was planted is killed. The cane then goes into a dormant state for the duration of the winter. When the growing season begins (spring) the cane will again sprout and begin to grow until it reaches maturity. At this time, the cane is harvested, but the stubble is left to

provide the crop for the next year and the year after. Consequently, with this type of crop, prolonged wetness any time during the year can be very detrimental. If extreme wetness occurs during the fall and winter, much of the cane will not survive until spring. Prolonged wetness inhibits root growth, thereby forcing the new plant to feed totally on the seed cane. Once the nourishment stored in the seed cane is depleted, the new plant without roots, dies. This reduces the plant population, thereby causing reductions in yields long before the crop is ready for harvesting.

If the wet periods occur in the summer, the plants have a better chance of surviving, because they have grown considerably since spring began. However, there still exists the real danger of loss due to wetness. This loss occurs when the soil, weakened by sustained wetness, loses its ability to support the plant. Therefore, the weight of the plant causes it to fall.

Reduced quality and increased cost during harvesting is another major problem that is directly attributable to wetness. Sugarcane is a crop that is highly perishable. Therefore, when it is ready to cut, it has to be cut and carried to the mill for processing; otherwise, there will be a rapid loss in sugar content. When it is extremely wet, the farmer will lose a considerable amount of money. Each farmer has a quota of cane that he must carry to the mill each day. He must carry his allotted amount regardless of the condition of his fields. When the fields are wet, more labor, equipment, and time is required to harvest the crop, which increases the farmer's cost of production. Quality is also reduced in this situation, because excessive amounts of trash and mud also go to the mill.

Harvesting under wet conditions continues to cost the farmer money after the harvest has been completed, because all the fields that were harvested when wet will need a lot of post-harvest preparation to get them back into desirable condition.

The farmers in this watershed are averaging about 29 tons of cane per acre. However, research has shown that proper water management (removing surplus water during periods of high rainfall and supplying water during droughts) can extend one planting of cane into three, and possibly four and five harvests at better than 40 tons per acre per year.

Soybeans also clearly illustrate the severity of the problem. The driest months are October, September, June, and November in that order. Rainfall is highest in summer and lowest in the fall.

Relatively little land preparation can be accomplished in early spring because of the flooding and wetness problems. Consequently, much of the crop is not planted until the end of May or the beginning of June and often as late as the first of July. Since June is one of the drier months, much difficulty is encountered in establishing a good stand. The low moisture content of the soil prevents germination and allows a black mold to form around the seed, causing it to rot.

The root system of these late soybeans is not as extensively developed as the earlier beans. Therefore, their growth is affected more by lack of moisture in the dry months of June and October than they would have been if they had been planted early. These late soybeans are not ready for harvest until late October, November, or early December. Thus, much of the harvest is delayed or performed under highly unfavorable conditions. Almost every year some crops are not harvested because of the wet condition of the soil.

The delays, because of wetness, cause the beans to mildew in the pod and retain more moisture than is desirable. The longer harvest is delayed, the greater the loss from pods shattering. When the ground is wet, the cutter bar of the harvester cannot be lowered as close to the ground as is desirable because the machine sinks and bogs. Therefore, soybeans are left in the field that would have been harvested had a better drainage condition existed. The harvested beans have to be hauled from the combine to the truck by tractor and grain cart instead of the combine emptying directly into the truck. Harvesting a given acreage requires about twice as much time under these adverse conditions.

Other crops in the problem areas are affected similarly. Farmers are faced with an annual cycle of uneconomic conditions. They are forced to plant late because they cannot get the seedbed prepared early enough. Because of this, they have to harvest late. The late harvest is excessively costly and causes lower quality products. Instead of leaving crop residues on the ground or planting cover crops to protect the soil from the high intensity winter rains, farmers plow during the fall to eliminate ruts that resulted from wet conditions. This early plowing speeds up seedbed preparation in the spring or early summer when time is so critical. If good drainage were provided, the farmers would be more apt to maintain a good soil cover in winter because they would have more time for seedbed preparation in the spring.

Average annual floodwater damages on crop and pasture amount to $527,700.

Erosion Damages

Erosion damages are minor within the watershed. While the erosion rates vary on forest land from 0.04 ton per acre per year to 5.81 tons per acre per year on soybean land, the watershed average is only 2.03 tons per acre per year. This amounts to a total of 223,000 tons of erosion per year for the watershed. Land use changes that are anticipated to occur without the project will raise the soil loss figure to 236,000 tons per year.

Sediment Damages

Due to the low rate of overall erosion, there is very little sediment damage and this is in terms of inseparable damage. Sediment concentrations downstream from land used for row crops are high and channel maintenance is high for channels draining this land. The increase of land expected to be utilized for soybeans and corn will increase this problem. Without the project, sediment rates are calculated to increase from 56,000 tons per year to 59,000 tons per year.

Irrigation Problems

There is not a significant irrigated acreage in the watershed.

Municipal and Industrial Problems

There are no municipal and industrial problems connected with water in the watershed.

Recreation Problems

The 1970 population 5 years of age and older within a 30-mile radius of the approximate center of the watershed is estimated to be 340,000. This area includes 17 villages, towns, and cities, only two of which are considered urban. Population projections6/ to the year 1990 indicate an increase in the number of people in the 30-mile radius area. The watershed is deficient in both public water-based outdoor recreation facilities and nonwater-based facilities. There are only 10 ponds and 1 lake in the watershed.

6/ George C. Christon and Harry S. Segal, Populations Projections to 1980 and 1990 for Louisiana and Its Parishes, Research Study No. 18 (New Orleans: Division of Business and Economic Research, College of Business Administration, University of New Orleans, 1973), pp 21-22.

These water bodies have a combined surface area of only 182 acres. Recreational use of the ponds, which are all privately owned, is confined mainly to fishing by the owner, family, and friends. The development of reservoirs for water-related recreational use is limited by the flat terrain. However, opportunities do exist for the development of recreational facilities on existing water areas.

Lake Clause has approximately 20 surface acres of water. The recreational use of Lake Clause is limited by lack of access, shallow depth, small size and fluctuating water level. Seasonally, Lake Clause floods up to approximately 160 acres. This area and seasonally flooded hardwood bottom lands in the western portion of the watershed provide good temporary waterfowl habitat and fair waterfowl hunting opportunities.

The lower reaches of Bayou Cholpe, Tommy, Tiger, Choctaw, Poydras, and Stumpy provide some recreational opportunities in the form of fishing. Use, however, is severely limited by poor access. There are no public boat launching ramps in the watershed.

Adjacent to the watershed are two large water bodies, False River on the north and the Mississippi River on the east. Due to commercial water transportation, pollution, limited access, and adverse flow characteristics, the Mississippi River has limited recreational use. Conversely, False River, a 3,200-acre oxbow lake of the Mississippi River, is highly developed, adequately accessible, and well used for fishing, water-skiing, boating, swimming, and water-enhanced recreational activities.

The 45,600 acres of mixed bottom land hardwood provide good wildlife habitat for both small and big game. Waterfowl utilize the hardwood bottom land areas which flood.

The public use of this area is highly restricted. Over 95 percent is posted against public use; much of the woodland is leased to private clubs which allow hunting by members and guests only.

Nonwater-based recreational areas in the form of local community parks, recreation areas, and trails are almost nonexistent, being limited to a few playfields at schools in the area and ball parks at Port Allen.

A sample of recreational needs based on the present population within the 30-mile radius of the approximate center of the watershed includes 3,632 tent camping sites, 3,426 trailer camping sites, 2,794 picnic sites, 664 boat ramps, and 9 beaches and associated swimming water areas.

There is a need for additional recreation facilities in the watershed, and local interest exists for developing these facilities. Some of the water-based recreational needs can be satisfied by the development of access and supportive facilities on existing water bodies. However, investigations indicate the opportunity for developing new water-related recreational facilities is restricted because water storage sites are severely limited by the flatness of the terrain. Nonwater-based recreation facilities, mainly in the form of picnic areas, tot lots, trails, playgrounds, ball fields, tennis courts, and passive recreational areas are needed for community parks and recreation areas. Development of new areas and expansion of existing facilities will be required to meet these needs.

Plant and Animal Resource Problems

Changed land use has affected fish and wildlife resources in the project area. The clearing of 7,000 acres of bottom land hardwoods in the past 10 years for agricultural uses such as pasture and soybean production has reduced the numbers of forest-dwelling wildlife species.

Another problem that affects the forest-dwelling species is "high grading" of the hardwood timber resource. This is a term that refers to harvesting the higher quality, more desirable trees and leaving the lower quality trees to produce new timber and wildlife foods. Forests which have good silvicultural methods in use provide sustained timber production as well as provide an abundance of wildlife foods.

Grazing of the bottom land hardwoods is a problem. Cattle which are allowed to graze freely in the hardwood timber seriously compete with the native wildlife species for food, especially during the spring months.

Access to much of the hunting areas is limited because of the lack of all-weather roads and because of posting of private land.

The fisheries lack high quality habitat. Commercial fishes dominate the fisheries in the channels. Lake Clause, the only lake, is a rather shallow body of water. Access to the fisheries is limited to road crossings and there are no public boat launching ramps.

Water Quality Problems

Water quality for the project area is satisfactory for agricultural uses, secondary recreation, and propagation of fish and wildlife, and is within guidelines established by the Louisiana Stream Control Commission for the present uses of the water resources with the exception of Lake Clause. Lake Clause had dissolved oxygen levels below the recommended Louisiana standard of 5 mg/l for 9 months of a 12 month sampling period. Several factors account for the low dissolved oxygen. Lake Clause is very shallow resulting in uniform high water temperature during the warm months. The solubility of oxygen decreases with high water temperatures. Lake Clause is completely surrounded by a dense growth of trees and shrubs. This situation inhibits wind from causing wave action which is a major source of oxygen. Duckweed completely covers the surface and also limits water surface disturbances. Heavy growths of aquatic macrophytes such as najas, coontail, and muskgrass further deplete oxygen when most of their annual growth is killed during winter months and decomposition occurs over an extended period of time. A large rookery of wading birds is present and the decomposition of wastes from these birds also reduces the dissolved oxygen. A combination of all these factors results in a high chemical oxygen demand (COD) and biochemical oxygen demand (BOD) for Lake Clause. Even though the water quality of Lake Clause is below that needed to support a diversified warm water biota, other habitat qualities make it a high value wetland area. Refer to Water Quality Criteria for Choctaw Bayou, Appendix I.

There are no major water quality problems associated with this watershed. See Water Quality Tabulation on page II-43. However the amounts of ammonia, nitrate, and orthophosphate were above levels for unpolluted waters. Refer to Appendix G, Interpretations of Water Quality Parameters.

Economic and Social

The economic and social problems of the watershed are directly related to the following:

1. Poverty
2. Unemployment
3. Welfare

4. Education

5. Out-migration

6. Low net returns per acre

Since the largest portion of the watershed is located in West Baton Rouge Parish, and the other two parishes involved are quite similar, it is reasonable to use parish data for West Baton Rouge as representative of the area.

The level of income necessary for surviving on a minimum diet with none of the amenities of prosperity has been determined by the Social Security Administration. An individual is considered poor if his personal income or the income of the family to which he belongs inadequately provides for his subsistence. In 1960, by this definition, 35 percent of all the families in West Baton Rouge Parish were classified as poor; 26 percent were white and 74 percent were nonwhite.7/

In 1966, 35 percent of all families were classified as poor. In 1969, 27 percent were classified as poor. This was a reduction of 8 percent since 1966. Only 0.4 percent of the families in the State of Louisiana lives in West Baton Rouge Parish. However, 0.5 percent of all the poor families in the State reside in this parish. Thus, West Baton Rouge Parish had a greater than proportionate share of poor families.8/

The following table shows the number of families, median income, and percent of families below poverty level for West Baton Rouge, Parish, categorized by rural farm, rural nonfarm, and urban for the year 1969.9/

7/ James R. Bobo and Dean A. Dudley, Statistical Abstract of Louisiana (4th ed.; New Orleans: Division of Business and Economic Research, College of Business Administration, Louisiana State University at New Orleans, 1971), p. 192.

8/ Ibid., p. 192.

9/ U.S. Department of Commerce, Bureau of Census, Census of Population: 1960, General Population Characteristics, Final Report PC(1)-B20, Louisiana. Washington: U.S. Government Printing Office, 1961.

Type of Families	Number of Families	Median Income	Percent of Families Below Poverty Level
Rural Farm	23	$3,654	17.7
Rural Nonfarm	620	6,563	29.7
Urban	1,249	7,714	21.9
Parish Total	3,780	$6,920	26.9

West Baton Rouge Parish economic conditions based on correlates of poverty were below the State average in 1970. The correlates used to determine these conditions were (1) primary individuals 65 years of age or over, (2) households having 1.51 or more persons per room, and (3) households lacking some or all plumbing facilities.10/

The population of West Baton Rouge Parish increased by 2,068 persons from 1960 to 1970; however, there was a 5.9 percent decrease in the expected 1970 population. The expected 1970 population was calculated by adding births from 1960 to 1970 to the 1960 population and then subtracting deaths which occurred during the same time period.11/

Many of the young adults are leaving the farm to seek employment elsewhere. Increased efficiency of remaining labor through greater mechanizatio n n is necessary for many of the family farms to remain economically viable.

Old age assistance and aid to dependent children are the two major types of welfare aid in West Baton Rouge Parish.12/ Of the total public welfare assistance grants ($835,221) made in Fiscal Year 1968-69, 56 percent was for old age assistance, 31 percent was for aid to dependent children, 9 percent was for disability assistance, and 4 percent for general assistance and aid to the needy blind.13/

10/ Fred M. Wrighton and Barbara H. Denton, "Population and Housing Correlates of Poverty in Louisiana, 1970," The Louisiana Economy (Ruston: College of Business Administration, Division of Business and Economic Research, Louisiana Tech University, 1971), Vol. IV, No. 2 (May 1972), p. 3.

11/ Ibid., Net Migration, p. 3.

12/ Bobo; op. cit., p. 79.

13/ Ibid., p. 79.

Information from the 1970 census reveals that 5 percent of the people 25 years of age and older had never completed 1 year of school, and 36 percent were high school graduates. The median for years of school completed was 10.1.

According to 1969 Census of Agriculture data, there were 141 farms in West Baton Rouge Parish. This was a decrease of about 37 percent in number of farms from 1964 to 1969. The average size farm was 392 acres in 1969, as compared to 246 in 1964. In 1969, 24 percent of the farms were less than 50 acres, and 48 percent were less than 100 acres. Farm units in the watershed are continually decreasing in number and increasing in size.

Projections show that the trend of decreasing number of farms and increasing size will continue in the future. Farmers are trying to raise their income and compensate for low net returns per acre by farming more acres. In order to accomplish this, they have to use larger, more expensive labor saving equipment.

The following minority conditions apply similarly to the watershed:

With regard to the minority population in Pointe Coupee Parish, about 67 percent of those below the poverty level are of minority races.

The rural minority population is about 9,100. Approximately 20 percent are unemployed. Of those who are employed about 3 percent are self-employed as farmers and 12 percent are agricultural laborers.

The median income for those minorities in agriculture is about $1,900 per family. This compares to the median family income of $3,273 for the minority population of the parish as a whole and which in turn is $1,784 less than the median family income for the parish.

The increasing cost of production inputs and the relatively static prices farmers received for agricultural products (except for most recent years) have caused net returns per acre to decrease. Decreased net returns per acre resulting from this situation have caused the small farm operator to leave the farm, expand his enterprises into economic size units, or seek employment elsewhere using farm returns as supplementary income. From 1950 to 1970, the number of farm operators has decreased by 73 percent and the average size of farms has increased by approximately 187 percent.14/ Many

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14/ U.S. Department of Commerce, Bureau of the Census, Census of Agriculture: 1970, Louisiana County Data, Final Report, Volume 1, Louisiana. (Washington: U.S. Government Printing Office, 1972), p. 481.

of the small farmers have either sold or rented their land. The majority of the remaining small farmers are employed off the farm and are not primarily dependent on the farm for their livelihood. According to the 1969 Census of Agriculture data, about 47 percent of the farms in the parish had sales of less than $2,500, about 63 percent had sales of less than $5,000, and about 75 percent had sales less than $10,000.15/

15/ Ibid., p. 481.

RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

None of the proposed works included in this statement will conflict with any plans, policies, or controls that are set forth in the Clean Air Act or the Federal Water Pollution Control Act Amendments of 1972.

Most Federal, State, and local land use plans in the watershed area are directed towards continued agricultural production. There are no known land use plans by the Federal Government that would interfere with implementation of the proposed project.

ENVIRONMENTAL IMPACTS

Conservation Land Treatment

The land treatment program for cropland and pastureland will increase crop production, improve soil cover, and provide for efficient and sustained productive use. Pasture and hayland practices will improve forage yields which will increase beef and dairy production and improve soil cover. In addition to bringing forestland to an acceptable level of forest management, the forest practices will improve wildlife habitat.

Onfarm drainage systems will reduce problems caused by soil wetness. Surface water will be removed more rapidly after rains, allowing the upper soil layers to quickly return to optimum moisture conditions. Improvement of soil moisture conditions will allow timely accomplishment of land preparation, planting, and harvest operation. Improved drainage will allow soils to warm up more rapidly in the spring. The installation of onfarm drainage systems, with adequate outlets provided, will have an overall effect of yield increase for cultivated crops and pasture plants.

Conservation cropping systems will improve or maintain good physical condition of the soil and help control weeds, insects, and diseases.

Crop residue management requires that adequate residue be left on the soil surface after harvest until it is necessary to prepare a seedbed for the succeeding crop. Crop residues will increase infiltration and reduce runoff which allows the soil to be recharged with precipitation from relatively small storm events. Residues have been shown to be very effective in reduction of soil loss from sheet erosion.

The conservation land treatment measure of chiseling and subsoiling allows for soil moisture recharge during winter and early spring and increases the effective rooting zone for all crops. Subsoiling experiments by the Agricultural Research Service have shown significant yield increases for cotton and sugarcane on similar alluvial soils.1/ Yield increases of 1.5 to 4.6 tons per acre of sugarcane were obtained in West Baton Rouge Parish.2/

1/ Saveson, I. L., Z. F. Lund, and L. W. Slone, Deep Tillage Investigations on Compacted Soil in the Cotton Area of Louisiana, 1961, ARS 41-41, pp. 5-9.

2/ Saveson, I. L., Z. F. Lund, and L. G. Davidson, Deep Tillage Investigations on Alluvial Soil in the Sugarcane Area of Louisiana, 1966. ARS 41-123, pp. 18-21.

Minimum tillage has a significant effect on soil erosion. Planting a crop without conventional land preparation can reduce the amount of soil loss by 75 percent.3/ Also, minimum tillage reduces costs of land preparation, reduces the formation of traffic pans, and improves soil tilth. This land treatment measure will be applied on approximately 2,700 acres of cropland during the 10-year installation period.

Application of land treatment measures will adequately treat approximately 53,100 acres or 48 percent of the watershed. Conservation plans will be prepared and some land treatment (not enough to be adequately treated) begun on the remaining acres of cropland and pastureland.

Applied land treatment measures in forest land will allow for the preservation of 20,000 acres of upland wildlife habitat. Multiple use management of 21,200 acres of forest land will provide increased benefits for wildlife, recreation, and timber production. Wildlife food and cover will be improved in openland by planting of 400 acres of suitable plant species. Wildlife habitat will be maintained or preserved on 1,200 acres of wetland.

The land treatment measures that directly reduce sheet erosion on cultivated land are crop residue management, minimum tillage, and conservation cropping system. Continuous row cropping with adequate fertilizer and residue management are usually part of a conservation cropping system. Conventional land preparation and tillage methods result in large amounts of soil loss and high sediment yield. Approximately 21,800 acres of cropland will have conservation cropping systems and crop residue management practices applied during the 10-year installation period. Approximately 9,650 acres of pastureland will be adequately treated during the 10-year installation period.

Land treatment measures allow for more intensive use of open land for agriculture. More intensive use of land for row crops increases the problem of soil erosion. Drainage practices have an indirect effect on reducing sheet erosion; however, this effect is generally offset by more intensive use of land for row crops. Drainage improvement on land now used for pasture makes these soils more attractive for planting row crops. If land use changes occur in the watershed, the overall effect of applied land treatment measures could be reduced.

The impacts of the project on erosion and sediment are detailed on page II-85.

3/ Soil-Water-Air Sciences Research, 1974. USDA, ARS, pp. 69-75.

Structural Measures

Flood Prevention and Drainage - The installation of the combined program of land treatment and structural measures will directly benefit about 34,300 acres of cropland and pastureland. Although benefits were not calculated on the remaining acres of cropland and pastureland, they will be affected by the accelerated installation of land treatment measures and by rotational systems allowable because of project effects on the benefited areas.

The area directly benefited consists of 11,100 acres of sugarcane, 9,800 acres of soybeans, 600 acres of cotton, 1,900 acres of corn, 1,200 acres of grain sorghum, and 9,700 acres of permanent pasture. Average annual yields per acre will increase 19 percent for sugarcane, 40 percent for soybeans, 34 percent for cotton, 46 percent for corn, 48 percent for grain sorghum, and 50 percent for pasture.

Forest land downstream from benefited areas and other forest land lower than the design water surface of adjacent project channels will remain in forest. The channels were not designed for the purposes of reducing flooding or increasing drainage in forest land. If such forest land were cleared for agricultural purposes, its flooding and wetness hazards would be greater than those of the benefited areas.

The project will accelerate the establishment of conservation practices and increase the effectiveness of those already on the land. These practices will protect the agricultural resources of the area and improve the environment. Land users will construct and maintain adequate on farm and group drainage facilities in order for full project objectives to be realized.

An estimated 190 farmers will benefit directly from the installation of project measures and land treatment. These measures will provide benefits for 800 farm family members and farm employees. Other persons dependent on farm trade will also benefit. Benefits will accrue from the financial and technical assistance made available for the installation of the project. This will bring outside monetary resources into the community and will provide an opportunity to use goods, services, and labor from the local area. The use of unemployed or underemployed local labor will be needed during project installation and throughout the project life for normal operation and maintenance.

Present and future land use (year 50 of the Evaluation Period) in the watershed under WITHOUT PROJECT and WITH PROJECT conditions are as follows:

Land Use	Present		Future Without		Future With	
	Acres	Percent	Acres	Percent	Acres	Percent
Cropland	38,400	35	62,300	56	63,202	57
Pastureland	15,000	14	15,000	14	14,952	14
Forest Land	45,600	41	16,600	15	15,294	14
Other land a/	11,000	10	16,100	15	16,552	15
Total	110,000	100	110,000	100	110,000	100

a/ Includes roads, channels, bayous, lakes, communities, farmsteads, rights-of-way, etc.

The preceding tabulation reflects land use changes from one category to another. The net effects of these changes in land use attributed to channel work will reduce open land acreage 246 acres. The majority of disturbed open land will revert to its present use. Forest land will be reduced approximately 106 acres for channel installation. This will increase "Other land" use about 352 acres.

Land use conversion from forest land to cropland during the project Evaluation Period is estimated to be 30,306 acres. Of this amount, trends indicate approximately 29,000 acres will be cleared without or regardless of the project. This trend is based on ongoing programs available for providing adequate outlets without Public Law 566 assistance. Approximately 1,200 acres of potential clearing could occur as a result of the project and about 106 acres of clearing will occur as the result of project channels rights-of-way.

Floodwater and drainage effects are discussed together because the problems are inseparable. Channels which remove floodwater also remove drainage water.

The reduction in flooding and impaired drainage will reduce the high risks involved in farming and make it a more profitable business enterprise. Farmers will be able to improve the quality and yields of their crops by (1) improving soil conditions, (2) planting earlier, (3) effectively controlling weeds and grasses, and (4) harvesting at favorable times.

Project measures will eliminate significant damages on agricultural land in the benefited area from a rainstorm which is expected to occur, on the average, once every 3 years. Runoff rates from the 3-year storm will exceed channel capacities, but the flooding

duration will not exceed 24 hours after cessation of rainfall. Flooding for this duration will not cause significant damages to crops and pastures. Larger storms will cause significant damages, but the damages will be less than they would be without the project.

Improved farming efficiency resulting from project installation will reduce the per unit cost of production. Reduced flooding, improved soil conditions, and better, more timely management practices will improve the quality of products marketed. The additional average annual income received due to improved quality will be $20,300.

Agricultural fertilizer uses will increase because of the project. Estimates of fertilizer use in the future show an increase of 28 percent, or 300 tons annually.

Studies 4/ have shown that following application, agricultural chemicals are lost from the soil through: surface runoff, sediment loss, volatilization, organism uptake, and degradation (microbial, photochemical, chemical). The relative significiance of the various mechanisms is highly dependent on existing environmental conditions and type of chemicals. Movement of agricultural chemicals to water courses is of primary environmental concern because of possible effects on the aquatic ecology. Other than direct application, surface runoff and sediment transport have been recognized as the major routes of these chemicals to an aquatic environment.

However, increased use of soil conserving practices and engineering structures by landowners under the accelerated land treatment program will reduce the annual soil loss and reduce runoff which will reduce the amount of agricultural chemicals entering the aquatic environment. Studies have shown that proper soil conservation practices will reduce erosion and sediment delivery rates. "The amount of sediment coming from watersheds having good conservation treatment at the Blackland Experimental Watershed, near Riesil, Texas, is only 12 percent of that from watersheds farmed without soil conserving practices."5/

4/ U.S. Environmental Protection Agency, Office of Research and Developement, Pesticide Transport and Runoff Model for Agricultural Lands, Environmental Protection Technology Series, EPA-660/274-013, December 1973.

5/ U.S. Department of Agriculture, Agricultural Research Service, Wastes in Relation to Agricultural and Forestry, Miscellaneous Publication No. 1065 (Washington: U.S. Government Printing Office, 1968), p. 36.

Based on these studies, the project should reduce the transport of agricultural chemicals to aquatic systems. Erosion rates within the watershed and sediment delivery downstream as described under Erosion and Sediment on page II-85 will cause this to occur. In addition to the physical soil conservation practices which will be implemented as a result of the project, proper application rates at the correct times will be encouraged. Application rates and soil conserving practices have a significant influence on the amount of agrichemicals that enter the natural environment.

The estimated reduction in agricultural flood damages brought about by the 3-year level of protection is 78 percent. Average annual crop and pasture damages from flooding will be reduced from $527,700 to $117,700. Indirect damages will be reduced from $52,800 to $11,800. In addition, farmers will be able to install on farm drainage measures resulting in $410,000 annually in benefits due to adequate drainage. Benefits resulting from more intensive use of cropland will average $91,100 annually. These benefits reflect increases in yields resulting from increases in efficiency of farming operations and increases in production inputs.

Peak stages will be increased in some channels downstream from modified channel reaches. The stage increases at selected points are shown in the following tabulation. Project measures will cause no stage increases downstream from the watershed.

	Increase in Stage-Feet		
Channel and Location	3-Year Storm a/	10-Year Storm a/	100-Year Storm a/
W-1 @ L-10	0.1	0	0
Bayou Cholpe @ L-9	.1	0	0
Bayou Cholpe @ L-7	0	0	0
Bayou Cholpe @ L-6	.1	0	0
L-4 @ Outlet b/	.1	.1	.1
L-4A @ Outlet b/	.1	.1	0
Choctaw Bayou @ Stumpy Bayou	0	0	0
L-3 @ Outlet b/	.1	.1	0
Choctaw Bayou @ L-3 Outlet	.1	0	0
Choctaw Bayou @ L-2	.1	0	0
Choctaw Bayou @ L-1	.1	0	0
Choctaw Bayou @ SW Corner Sec. 38, T8S, R11E	0	0	0
Choctaw Bayou Diversion at Intracoastal Waterway	0	0	0

a/ Storms with average recurrence intervals of 3, 10, and 100 years, respectively.

b/ Outlet is Corps of Engineers' project channel.

Project channels will be dug from one side, with consideration given to providing the most effective shade for channel water during the summer months. Channel excavation procedures are illustrated by appendix F, figures 5 and 6.

Aesthetic resources will be affected in the 23 miles of channel to be worked through forest land and 16 miles through open land where woody vegetation grows along the banks. Trees inside the channel rights-of-way may be aesthetically pleasing because of unique characteristics of size, form, color, leaf texture, bark, flowers, or fruits. Such trees will be preserved wherever they will not seriously hinder construction or operation and maintenance.

Erosion and Sediment - Sheet erosion will be reduced approximately 24,000 tons per year, or 10 percent, and sediment will be reduced approximately 6,000 tons per year, or 10 percent after the 10-year installation period.

The reduction in sheet erosion due to land treatment measures will offset the erosion caused by construction during the installation period. There will be a reduction of approximately 20,000 tons of sediment during the installation period.

Erosion rates will range between 0.04 ton per acre per year on forest land to 4.83 tons per acre per year on soybean land with the project. This is a 0.35 ton (7 percent) decrease on the soybean land.

The accelleration of land treatment measures to be put on the land will reduce sheet erosion causing a reduction in sediment delivered within channels and downstream. The practice of construction from one side of channels will reduce the amount of construction induced sediment. The two weirs on Channel L-6 will trap some construction sediment as they are planned to be installed prior to channel excavation. Additionally, this trapping will reduce some plant nutrients downstream during periods of low flow.

Land treatment measures will increase the infiltration rate which will aid in the recharge of the unconfined aquifer. A consideration that must be made when assessing the ground water effect is that the Mississippi River is hydraulically connected with this unconfined aquifer and there is an exchange of water dependent on the stage of the river.

Fish and Wildlife - The installation of the stop log weir in Channel L-3 will maintain the existing water levels of Lake Clause. This weir is designed to allow the water level of Lake Clause to be lowered for the purpose of fish and wildlife management. This feature will allow the water to be lowered during the late summer months to establish plants such as browntop millet, Japanese millet, or corn, which are used by waterfowl. Then, the water levels could be allowed to return to normal levels during the winter months to create feeding areas for waterfowl.

The two weirs in channel L-6 will create 16 surface acres of ponded water for a length of 6 miles. Increased aquatic habitat will be provided for amphibians, reptiles, and wading birds. The 16 acres of impounded water will support moderate populations of commercial fish species.

Additionally, the impounded water created by the upper weir may support low to moderate populations of game fish. The crest on the upper weir is such that water will be maintained in the existing stream bed at approximately the same depth as currently occurs. Spawning areas will be available in the wooded stream bed of Bayou Tommy. Since the existing bayou bottom will not be disturbed except on one side where the upper weir will be installed, at highway crossings, or pipelines, the benthic community above this weir will be maintained or relatively undisturbed. The benthic fauna, which consists of organisms such as aquatic invertebrates - insects, worms, and crustaceans, provide an important part of the food chain for fish. Also, the aesthetics of the bayou will be partially maintained since the existing trees will not be disturbed in the stream bed and on one bank. These trees not only contribute to aesthetics, but also furnish excellent nesting habitat for wood ducks, woodpeckers, squirrels, and other wildlife.

The approximate one half mile of water impounded above the lower weir will primarily be confined to the new constructed channel. The existing stream bed in this section of Bayou Tommy will not be covered with water the majority of the time. Existing fisheries and the benthic community will probably be eliminated in this stream section. The crest elevation of the lower weir will insure that low flows will continue through the undisturbed portion of Bayou Tommy downstream from the point of diversion.

Another function of the weirs is to reduce vegetative maintenance needed in the channels. This will reduce the amount of disturbance to the aquatic environment in the future. However, shallow water in the upper portion of the ponded water may have occasional growths of undesirable aquatic plants. Periodic blue-green algae blooms could occur during extended periods of low flow. However, the channel drainage area at the weirs is large enough to provide

a frequent flushing action except during prolonged dry periods. Anabaena and Anacystis would be the most likely algal species associated with extended dry periods. The Local Sponsoring Organization will be responsible for identifying problem areas and will consult with local fisheries biologists for corrective action. Copper sulfate, cutrine, or similar algaecides will be used to control algal blooms.

The ponded water created by the weirs in Channel L-6, because of shallow depth and their small size will offer poor quality water-based recreation. The weirs are not readily accessible to the general public because of their location. Consequently, no recreational developments are anticipated at these sites.

Five miles of channels containing ponded water will be modified. All these channels have been previously worked. Project construction will cause in-channel cover and bank cover on one side to be removed. Disruption of the benthic community and temporary increases in turbidity and suspended solid concentrations will occur. Water temperatures will increase during the summer months because some trees and other bank vegetation will be removed. These alterations will cause a lowering of the biological productivity. Recovery of the biological productivity depends upon recovery of the benthic community, recovery of adequate channel cover, and recovery of water quality to preproject conditions.

The effects of project construction on 4 miles of an intermittent channel will be similar to those described for a ponded water channel. All the intermittent channels have been previously worked. However, water temperatures are not expected to increase in intermittent channels because of the lack of water during the summer months.

The effects of project construction on 83 miles of ephemeral channels will reduce temporarily lower food chain organisms such as aquatic insects, minnows, crustaceans, and amphibians. Recovery of the food chain organisms to near their original populations will occur when the habitat recovers to former conditions.

Turbidity and suspended solids concentrations will temporarily increase in Choctaw Bayou downstream from project construction. Although downstream water quality will be temporarily lowered, the existing aquatic organisms should tolerate the temporary change in water quality. The species diversity and the standing crop of fishes will not be significantly affected.

Clearing of bottom land hardwoods for rights-of-way in forest and wooded channel banks will reduce the wildlife habitat 288 acres for forest-dwelling wildlife species. Bottom land hardwoods which presently exist provide more valuable habitat than the vegetative community that will remain after construction. Recovery of the

disturbed hardwood community will take about 20 to 25 years, provided additional disturbances do not occur during this interval. Approximately 82 acres of project-created spoil in the forest land will be planted to hardwood seedlings to partially mitigate the loss to rights-of-way. For the effects that the loss of forest habitat will have on wildlife populations, refer to the following tabulation, "Changes in Habitat and Estimated Game Populations Caused by Project Construction."

CHANGES IN HABITAT AND ESTIMATED GAME POPULATION CAUSED BY PROJECT CONSTRUCTION

Choctaw Bayou Watershed, Louisiana

Species	Habitat	Acres Gained or Lost	Number of Animals
Dove a/	Open land	+270	+ 90
Quail a/	Open land	+270	+ 14
Woodcock	Open land & Forest land	- 42	- 4
Squirrel	Forest land b/	-288	-144
Deer	Forest land b/	-288	- 14
Rabbit	Open land & Forest land	- 42	- 4
Waterfowl (Resident)	Water areas & Forest land b/	-288	- 2
Waterfowl (Migratory)	Water areas & Forest land b/	-288	- 19
Wild turkey	Forest land b/	-288	- 1
Black bear	Forest land b/	-288	c/

a/ Temporary gains.

b/ This represents the total rights-of-way planned in the forest land (279 acres) and wooded channel banks (263 acres) with the existing channel acres (254) subtracted.

c/ Population data not available at the present time.

The number of acres shown in the column "Acres Gained or Lost" is the actual amount of (right-of-way) habitat that will be affected directly by project construction. The "Number of Animals" column gives the number of animals that will be increased or decreased due to project construction or alteration of its habitat type. To get the number of animals for this column, refer to the tabulation on page II-101 for data on populations in "Number Per Acre" column. This number/acre for each species is divided into the amount of habitat increased or decreased which gives the "Number of Animals" affected by the project.

Open land species habitat such as mourning doves and bobwhite quail will increase from the conversion of forest land and wooded channel banks to spoil and berms. This change as a result of the project will increase open land habitat 270 acres. However, this will be a temporary increase because the spoil and berms will revert to a brushy condition in about 3 years. Rest and escape cover are the only values these areas will provide at this time.

The impacts of this project on the "endangered" animal species that occur or are occasional visitors will be minimal. However, the cumulative impact of this project and other similar projects is reducing available habitat for these animals.

None of the 1,782 acres of wetlands are within the area to be cleared for channel rights-of-way. Construction of Channel L-3-F, the channel that drains into Lake Clause, will be terminated approximately one-half mile upstream from the existing water level of the lake. This half mile of Channel L-3-F flows through one-fourth mile of pasture and one-fourth mile of wooded swamp which will help to settle out some of the construction-induced sediment. However, 20 acres of Type 5 wetlands will be affected by increases in turbidity, suspended solids, and sedimentation as a result of channel construction upstream from Lake Clause.

A partial diversion of water from the lower 6 miles of Bayou Tommy will occur as a result of a three-fourth mile new channel to be constructed in order that water can be diverted into Bayou Cholpe. Bayou Cholpe has been enlarged downstream from the proposed point of confluence by the U.S. Corps of Engineers. The forest land adjacent to Bayou Tommy and downstream from the upper weir will not receive as much overbank flow as it does now. The 285 acres of Type 1 wetlands located downstream from the point of diversion will not be affected by the project. The recharge water necessary to retain this area in its natural condition is furnished by its natural drainage area.

Hardwoods are benefitted by periodic flooding during their dormant period. Studies have shown that radial tree growth increases as a result of periodic flooding. Also, mast production will probably be increased. The reduction of overbank flooding along Bayou Tommy could cause a reduction in tree growth and mast production for the adjacent forestland.

Efforts will be made to avoid creating conditions which will increase populations of vectors which in turn affect human health conditions. For example, openings will be provided in the new sections of spoil to prevent standing, trapped water. These openings will help reduce mosquito production areas. Also, the clearing of channels should reduce mosquito production sites within the channels. The two project weirs will create 16 surface acres of ponded water which could produce conditions favorable for mosquito production. However, water behind the project weirs is expected to contain gambusia (mosquito fish) and other aquatic organisms that feed on mosquito and their larvae. If the natural controls are not effective at all times, additional prevention and control measures can be implemented in cooperation with appropriate Federal, State, and local health agencies. Implementation of this project with careful attention to vector and rodent control can result in an overall beneficial impact.

Archaeological, Historic, and Scientific

There are no known geodetic control survey monuments that are located within the area to be disturbed by the installation of structural measures.

There are no properties listed in the National Register of Historical Places that will be affected by installation of structural measures. This project will have no effect on any known archaeological or historical sites.

Economic and Social

Agriculture, the economic base of the watershed, will be enhanced. The project will increase agricultural development, which will increase the profits of processors and sellers of agricultural products as well as other goods. The economy of the area will be enhanced by the higher salaries of those presently employed and those hired to do the additional work.

The higher level of protection, the reduced fixed cost of production, and the increased quality of products will give farmers an incentive to increase production inputs. They will buy better quality seed and will use more fertilizer and lime. Expenditures for products used in harvesting and hauling the product to market will increase. This will stimulate economic activity within the watershed and in the surrounding areas. More jobs will be created in the processing and service industries. The value of property will increase, which will increase the tax base. Thus, the parishes will have more funds to develop health, recreational, educational, and other needed facilities.

Installation of the project will create about 38 man-years of local labor over a 5-year period. The expenditure of $3,338,300 for the installation of land treatment measures will create an additional 92 man-years of labor over a 10-year period. Operation and maintenance will provide 3 man-years of local labor for the life of the project.

The project will help slow the trend of decreasing number of farms and increasing size of farms. With the project, optimum-sized, labor-saving equipment will be more efficiently used on the farms. This and other factors will decrease costs and increase yields, thereby increasing the profitability of farming causing farming to be more competitive with other industries for labor. This will slow the out-migration trend.

The gross sales of farm products are expected to increase approximately 30 percent. The average annual overall net farm income will increase about $4,400 per farm. With this increased and more stable income, the farmer may improve his house or buy a better automobile. He will be able to afford better dental and health care, more insurance, better clothes, and other amenities of life for his family. He will be able to pay higher wages to his employees who will then be able to improve their living conditions. It is estimated that the income of approximately 2 percent of the farm families in minority groups and whose farms would be directly benefited by the project would have an opportunity to raise their income to a level above the poverty level.

Local traffic patterns will be interrupted temporarily during the replacement of bridges and culverts resulting in inconveniences to the people involved. Detour routes will be available such that no one will be deprived of access to their destination. Noise levels will increase at the construction sites. Increases in turbidity will occur downstream temporarily until the exposed areas are revegetated.

External economies will accrue after the installation of project measures. The values added to the immediate products and service as a result of activities stemming from or induced by

the project will enhance the overall local economy. The increased production of goods stemming from the project will place new demands on the processing, transporting, and marketing industries within the area. Processors, business establishments, and other individuals not directly benefited, will profit from increased sales of their agriculturally-associated goods and products. Suppliers of the additional materials and services required as a result of project production of goods and services induced by the project will stimulate local and regional economic activity. Although some agricultural products are processed within the watershed, most are processed outside the watershed, increasing economic activity.

International Impacts

Soybean and sugarcane production are the most important agricultural enterprises in the watershed. Both these commodities have impacts on international economies and health. World shortages of food, particularly high-energy and high-protein foods, affect the lives of millions of people daily.

Sugarcane production is dependent upon the right combination of soil and climate which, on the United States mainland, is unique to portions of Louisiana, Florida, and Texas. Therefore, there is limited chance of expanding sugarcane agreage. Increased yield per acre is the only way to increase domestic production of sugar. In 1973, the total United States sugar consumption was about 12,000,000 tons, or 102.38 pounds per capita. Of this, about 53 percent was domestically produced, and 47 percent was supplied by foreign producers. Obviously, with this type of situation, it would be advantageous to the United States to increase its own sugar production. This will serve to reduce imports, thereby improving the balance of trade, and help to reduce the world shortage of sugar.

The soybean is a protein-rich, high-energy foodstuff that is unique in that it supplies nearly all the major needs of the human diet. Soybeans are considered to be the answer to many of the world's nutritional problems. Increased yields resultant from the Choctaw Bayou Watershed Project, no matter how incremental, will help reduce world shortages of food.

Favorable Environmental Impacts

Economic activity in the watershed will increase.

Average annual agricultural damages due to flooding will be reduced 78 percent. Agricultural damages due to poor drainage will be reduced.

The proportion of costs to value per unit of production will decrease.

A total of 34,300 acres of cropland and pastureland will benefit directly from the combined program of land treatment and structural measures. Increased infiltration rate will aid in the recharge of the unconfined acquifer.

An additional 16,600 acres of cropland and pastureland will benefit from accelerated land treatment and rotational systems.

A total of 35,200 acres of forest land will benefit from accelerated land treatment.

About 190 farmers and 800 farm family members and the employees of those farmers will benefit because of increased income resulting in improved living conditions, better farming equipment, higher education, and better health care.

The average annual gross sales of farm products will increase, resulting in increased average annual net farm incomes.

Installation of structural measures will create 38 man-years of local labor over a 5-year period. Operation and maintenance will provide 3 man-years of local labor for the 50-year project life.

Installation of land treatment measures will create an additional 92 man-years of local labor over a 10-year period.

The estimated 2 percent of farm families of minority groups whose income is below the poverty level will have the opportunity to increase their income to a level above the poverty level.

The project will indirectly afford employment opportunities for workers in minority groups.

Increased sugarcane yields will increase domestic supply of sugar, thereby improving the United States balance of trade.

Increased crop yields will provide more efficient use of prime agricultural land to increase production of protein-rich, high-energy foodstuff to help the world's nutritional problems.

Erosion and the resulting sedimentation will be decreased with installation of planned project measures.

Sheet erosion will be reduced approximately 10 percent, or 24,000 tons per year after project installation.

Sediment delivered to Choctaw Bayou as a result of sheet erosion and project construction activities during the 10-year installation period will be 20,000 tons less than it would be without project conditions. Following the installation period, sedimentation as a result of sheet erosion will be 10 percent, or 6,000 tons per year, less than it would be without project conditions.

Erosion rates on soybean land will be reduced from 5.81 to 4.83 tons per acre per year (7 percent).

Some agricultural chemicals delivered downstream will be reduced due to reduction in sheet erosion as a result of land treatment measures.

Access to project channels will be improved.

Installation of two temporary structures for water control (weirs) will create 20 acres of ponded water, which will serve as fish and wildlife habitat, will reduce channel maintenance needs, and provide additional water for agricultural uses.

There will be a reduction in mosquito habitat behind the two weirs on Channel L-6 and within the channels because of the removal of in-channel pot holes.

Installation of the structures for water control (stop log weir) located downstream from Lake Clause will allow the water level of this lake to be fluctuated for the purpose of fish and wildlife management.

Specific construction measures outlined in the PLANNED PROJECT section provide for retaining the trees, aesthetics, wildlife, and fish resources on one side and in the existing bottom of Channel L-6 (Bayou Tommy).

The planned crest elevation of the upper temporary weir in Channel L-6 is such that shallow water will be maintained in the undisturbed bottom of the bayou providing spawning and feeding areas for fish and other wildlife.

Populations of mourning doves, bobwhite quail, and some nongame species will temporarily increase.

The potential land use change from forest to open land would create an additional 1,200 acres of open land habitat.

Adverse Environmental Effects

Approximately 13,000 tons of sediment as a result of construction activity will be delivered to Choctaw Bayou during the 5-year construction period.

More intensive use of open land for agriculture will increase soil erosion problems on this land.

Turbidity and suspended solids will increase downstream during, and for a short period after, construction of project channels.

Occasional periods of aquatic weed growth may occur in the permanent water created by the two structures for water control (weirs).

A temporary lowering of water quality as a result of construction activities will cause a temporary reduction in the biological productivity of the aquatic ecosystem.

About 246 acres of open land, 50 acres of wooded channel banks, and 106 acres of forest land not presently occupied by channels, berms, and spoil will be disturbed during cnstruction. In addition to this, 670 acres presently occupied will be disturbed. The disturbance of 1,072 acres of rights-of-way for project channels will result in some reduction of both game and nongame animals.

A potential loss of 1,200 acres of forest land and habitat could occur as a result of the project. It is estimated that 400 acres of this clearing could occur during the 10-year installation period, and the remaining 800 acres within the next 10 years. This would eliminate 1,200 acres of habitat important for forest dwelling wildlife species and timber production capability.

There will be a loss of 288 acres of potential habitat for forest dwelling wildlife species through the conversion of forest land and wooded channel banks to channels, berms, and spoil.

Habitat for alligator, waterfowl, and other aquatic wildlife will be degraded in some channels where potholes and cover will be removed.

There will be a slight increase in water temperatures where large trees and other bank vegetation are removed. This will be most prevalent in ponded water areas.

The existing fisheries and benthic community will probably be eliminated in the stream section of Bayou Tommy between the two weirs.

The aesthetic resource will be changed along 23 miles of channels in forest land and 15 miles of channels with wooded banks.

The amount of overflow from Bayou Tommy both above and below the diversion on Channel L-6 will be reduced.

The reduction of overbank flooding along Bayou Tommy could cause a reduction in tree growth and mast production for the adjacent mast forest land.

ALTERNATIVES

Land Treatment Only

The major land treatment measures that would be installed under this alternative are conservation cropping systems, crop residue management, land smoothing, drainage mains and laterals, drainage field ditches, drainage land grading, pasture and hayland management, pasture and hayland planting, wildlife wetland habitat management, wildlife upland habitat management and forest land management. These measures would treat adequately about 19,500 acres that have little or no damage from flooding and inadequate drainage.

The total installation cost would be approximately $884,000. An additional 24,600 acres will have some land treatment measures installed. However, their effectiveness would be restricted because of inadequate protection and drainage outlets.

The selection of land treatment measures is dependent on the soils and the planned crops. Soils that have a wetness problem and are used for row crops, such as sugarcane, cotton, and soybeans, require the timely removal of surface water and the improvement of internal drainage. These soils normally have slow permeability that severely restricts percolation and lateral movement of water in the root zone. Drainage field ditches, drainage mains and laterals, drainage land grading, and land smoothing will accomplish the timely removal of surface water where adequate outlets exist. These measures, combined with crop residue management and conservation cropping systems, will improve the tilth of the soils and increase the movement of air and water within the soils. A complete program is required for maximum benefits of any land treatment measures.

This alternative would not eliminate the need for adequate outlets for on farm drainage systems. Without the drainage outlets necessary for on farm drainage, the amount of land treatment will be seriously curtailed. Therefore, the installation of land treatment only would not provide the means of achieving the intended goals and purposes of this project.

Land Use More Tolerant to Wet Soil Conditions

Most soils in this watershed are slowly and very slowly permeable and possess a high water-holding capacity. In addition, the topography is nearly level, which causes the surface discharge of water to

be very slow. Land use without structural measures that would be tolerant of wet soil conditions include rice production and crawfish farming.

Because soil types are favorable, approximately 10,000 acres of row crops and pasture could be converted to rice production. Although wet conditions at certain times hinder production of rice, it is the most water tolerant crop known which could be grown in the area.

Crawfish in rotation with rice could be introduced. The production of this crustacean fits in well with rice culture. Rice levees constructed to hold irrigation water also could serve as embankments which would turn ricefields into crawfish ponds. About 3,300 acres annually of the rice acreage could be used for this purpose. Plant stubble and chaff left after the rice harvest would serve as food for the crawfish. Irrigation systems used for rice production also would serve as a source of water for crawfish.

No commercial crawfish are grown in the watershed. In the traditional Louisiana rice areas where crawfish are grown, several drawbacks have been experienced. Fields on which insecticides have been used for control of rice insects have failed to produce crawfish.1/ Crawfish production is quite variable. An improperly located or poorly constructed pond or field has little chance of producing more than 100 - 200 pounds per acre. Well constructed and properly managed ponds or fields commonly produce 500 - 700 pounds per acre.2/ Research in crawfish production was initiated in 1964 at Louisiana State University. Until research progresses to the point where methods are developed to consistently produce high yields, the use of crawfish in rotation with rice will remain relatively low.

Another factor which reduces the desirability of crawfish production is harvesting. Soybean farming requires the same production machinery as rice and crawfish farming is much more labor intensive. Crawfish harvest usually begins in January or February which makes it cold, wet work for the first 2 or 3 months. Unless a farmer's operation is small enough to allow him to do all the work or is located in an area where commercial fishermen reside, he will

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1/ Carl H. Thomas, "A Preliminary Report on the Agricultural Production of the Red-Swamp Crawfish (Procambarus clarkii) (Girard) in Louisiana Rice Fields", Proceedings of the Seventeenth Annual Conference, Southeastern Association of Game and Fish Commissioners, 1963, p. 184.

2/ LaCaze, Cecil, "Crawfish Farming." Louisiana Wild Life and Fisheries Commission.

usually experience difficulty in finding labor for harvest. If crawfish production were introduced on a large scale in the watershed, this problem would be greatly magnified.

The crawfish industry is steadily growing in southern Louisiana, but it is still relatively small and unorganized when compared to soybeans and cattle. No large central marketing facilities have been developed.

With the present land use distribution, net returns are estimated to be approximately $3,850,000. The crawfish alternative discussed above, assuming stable crawfish yields per acre, would generate an estimated $3,728,000 in net returns. This would be approximately $122,000 less annually.

Floodproofing and Land Treatment

This alternative would include leveed floodways to prevent headwater flooding, and pumps to remove excessive rainfall from the protected areas. Channels would be required inside the leveed areas to deliver water to the pumps. It is estimated the installation of this system would cost $15,600,000 and its annual operation and maintenance would be about $850,000.

The land treatment program would include conservation measures to treat adequately 53,100 acres at a cost of $3,061,800. The conservation measures needed to treat this area would include, but not be limited to, conservation cropping systems, crop residue management, land smoothing, drainage field ditches, drainage mains and laterals, drainage land grading, pasture and hayland management, pasture and hayland planting, wildlife wetland habitat management, wildlife upland habitat management and forest land management. These measures would be installed singly or in combinations as needed. They would reduce runoff, improve water quality, and improve the tilth of the soils.

The total estimated cost of developing this alternative would be $18,661,800. It would require more land for rights-of-way than the selected alternative. In addition, the pumps would have a high noise level; and excessive erosion and turbidity could occur at the points of discharge. This operation would be dependent on fuel or electric power. If one or the other were not available at a time when the pumps were critically needed, very serious flooding problems would occur. Also, the use of pumps would add to the energy shortage problem.

From an erosion and sediment standpoint this would be an undersirable alternative plan. The construction of the levees and channels would create sediment. Land treatment measures would not be adequate to offset these increases.

This alternative would cost approximately $13,000,000 more than the selected alternative and produce about the same level of benefits.

Channel Work and Land Treatment

Various sizes and lengths of channels were studied to determine effects of the 1.5-, 3-, or 5-year level of protection. The effects of each of these levels of protection were evaluated for WITHOUT AND WITH PROJECT conditions. The same three levels were used for each evaluation unit because the intensity of land use is about the same throughout the project area. The evaluation units correspond to the drainage areas of the channels involved. The evaluation units are delineated and labeled on the Project Map. The effects of the 1.5- and 5-year levels were unacceptable alternatives and are further explained in this section. The selected 3-year level on which the project is based is explained in the PLANNED PROJECT section. The effects of the three levels of protection on wildlife habitat changes and game populations were also evaluated. See tabulation on the following page.

The types of land treatment measures to be installed would be the same as those discussed under the Floodproofing and Land Treatment alternative. The 3- and 5-year levels of protection would provide the benefits described previously however, the outlet limitation of the 1.5-year level of protection would reduce the effectiveness of the land treatment program and the amount of land to be treated adequately.

Smaller Channels - Providing a 1.5-year level of protection by channel work would require about 104 miles of channel work and 565,000 cubic yards of excavation. The total installation cost would be $1,915,600. The annual cost, including operation and maintenance, would be about $161,000; the damage reduction would be 67 percent. The average annual flood prevention and drainage benefits would be approximately $748,000.

The land treatment program under this level of protection would include the installation of the necessary going and accelerated conservation measures to treat adequately 51,700 acres. This would cost an estimated $2,237,576.

EFFECTS OF THREE LEVELS OF PROTECTION ON HABITAT CHANGES
AND POPULATIONS OF ESTIMATED GAME SPECIES
Choctaw Bayou Watershed, Louisiana

Species	Animals Per Acre	Acres	Total Animals	1.5-Year Level of Protection[a]		3-Year Level of Protection[a]		5-Year Level of Protection[a]	
				Acres[b]	Animals[b]	Acres[b]	Animals[b]	Acres[b]	Animals[b]
Dove	1/3	53,400	17,800	+257	+ 86	+270	+ 90	+281	+ 94
Quail	1/20	53,400	2,670	+257	+ 13	+270	+ 14	+281	+ 14
Woodcock	1/10	99,000	9,900	- 19	- 2	- 42	- 4	- 60	- 6
Squirrel	1/2	45,600	22,800	-264	-132	-288	-144	-307	-154
Deer	1/20	45,600	2,280	-264	- 13	-288	- 14	-307	- 15
Rabbit	1/10	99,000	9,900	- 19	- 2	- 42	- 4	- 60	- 6
Waterfowl (Resident)	1/150	99,182	660	-264	- 2	-288	- 2	-307	- 2
Waterfowl (Migratory)	1/15	99,182	6,610	-264	- 18	-288	- 19	-307	- 20
Wild Turkey	1/200	45,600	230	-264	- 1	-288	- 1	-307	- 2
Black Bear	[c]	45,600	[c]	-264	[c]	-288	[c]	-307	[c]

[a] Protection of agricultural land from a storm which is expected to occur on an average of once in this many years
[b] Indicates changes because of construction under three levels of protection
[c] Population data not available

Land committed to channel, berm, and spoil areas would change in the following manner:

1. Land within channels would increase from 464 to 483 acres.

2. Land used for berms would increase from 37 to 238 acres.

3. Land used for spoil would increase from 169 to 300 acres.

Land used for channels and berms will increase because of channel enlargement and leaving wider berms to serve as maintenance access. Land occupied by spoil displayed above will actually decrease because existing and project-created spoil in open land will be spread.

Type of habitat in which channels are located was categorized according to examples shown in the Plant and Animal Resources section. Channels located on cropland and pastureland which had no trees or brush on the berms and spoil were categorized as open land. Channels located on open land with narrow strips of brush or trees along these channels are categorized as wooded channel banks. Channels located in forests were categorized as such. Land used for channels, berms, and spoil within these three categories would change in the following manner:

1. Open land acres occupied would only increase from 284 to 357 acres, because the spoil in these areas will be spread.

2. Wooded channel bank acres occupied would increase from 213 to 255 acres.

3. Forest land acres occupied would increase from 173 to 263 acres.

The loss in wooded channel bank acreage to channel and berm would decrease wildlife habitat for certain species. The acres of spoil disturbed in the wooded channel banks and forest land would return to tree cover through natural plant succession and some tree plantings.

The 386 acres of channels to be worked would include 267 acres of channels to be excavated and 119 acres of channels to be cleared.

Larger Channels - Providing a 5-year level of protection by channel work would require 104 miles of channel and 765,000

cubic yards of excavation. The total installation cost would be $2,538,700. The annual cost, including operation and maintenance, would be $203,200. The damage reduction would be 84 percent. The average annual flood prevention and drainage benefits would be approximately $1,145,600.

The land treatment program would include the installation of the going and accelerated necessary conservation measures to adequately treat 64,900 acres. The cost is estimated to be $2,808,872. The measures to be installed include the same features discussed under Floodproofing and Land Treatment.

Land committed to channel, berm, and spoil areas would change in the following manner:

1. Land within channels would increase from 465 to 525 acres.

2. Land used for berms would increase from 37 to 258 acres.

3. Land used for spoil would increase from 169 to 327 acres.

Land used for channels and berms will increase because of channel enlargement and leaving wider berms to serve as maintenance access. Land occupied by spoil displayed above will actually decrease because existing and project-created spoil in open land will be spread.

Land used for channels, berms, and spoil within the three categories - open land, wooded channel bank, and forests - would change in the following manner:

1. Open land acres occupied would only increase from 284 to 389 acres, because the spoil in these areas will be spread.

2. Wooded channel bank acres occupied would increase from 213 to 271 acres.

3. Forest acres occupied would increase from 174 to 291 acres.

As a result of construction there will be a loss in wooded channel bank acreage to channel and berm which would decrease wildlife habitat for certain species. The acres of spoil disturbed in the wooded channel banks and forest land would return to tree cover through natural plant succession and some tree plantings.

The 461 acres of channels to be worked would include 330 acres of channels to be excavated and 131 acres of channels to be cleared.

The larger channel alternative would require additional excavation especially in the lower reaches of the channels. These are environmentally sensitive areas and the benefit - cost ratio for the selected plan was favorable. The Sponsors selected the 3-year level of protection as it met their objectives at a lower cost and provides less adverse environmental effect.

NO PROJECT

This alternative would include only the current land treatment program. At present, 2 percent of the watershed has received adequate land treatment. The data on the following page summarizes the land treatment measures applied to date and costs. With the No Project alternative, the amount of land treatment measures installed would remain about the same.

Land use changes that will occur will increase erosion from 223,000 tons per year to 236,000 tons per year. This is an increase of 6 percent. Sediment being delivered to the watershed outlet will increase from 56,000 tons per year to 59,000 tons per year.

The increased sediment in the channels will reduce the channel capacity, increase the amount of growth of aquatic plants, increase the frequency and duration of flooding, and decrease the quality of water from a fisheries standpoint.

Sponsors do not have sufficient funds to finance the orderly installation of a completely planned channel system. The pursuit of this alternative would result in little or no emphasis being placed on environmental values. If the project is not installed, net annual benefits of about $914,200 will be foregone.

LAND TREATMENT

Choctaw Bayou Watershed, Louisiana
Pointe Coupee, Iberville and West Baton Rouge Parishes
Louisiana

Land Treatment Measures	Unit	Applied To Date	Total Cost 1/
			--dollars--
Bedding	Acres	958	43,100
Chiseling and Subsoiling	Acres	500	4,500
Conservation Cropping System	Acres	4,248	29,700
Crop Residue Management	Acres	4,248	10,600
Drainage Land Grading	Acres	2,226	222,600
Land Smoothing	Acres	703	28,100
Drainage Mains and Laterals	Feet	309,487	108,300
Pasture and Hayland Management	Acres	1,200	36,000
Pasture and Hayland Planting	Acres	1,200	96,000
Structures for Water Control	Number	84	12,600
Drainage Field Ditches	Feet	135,917	16,300
Wildlife Wetland Habitat Management	Acres	65	300
Wildlife Upland Habitat Management 2/	Acres	5	--
Timber Stand Improvement	Acres	200	7,000
Forest Management Plans	Acres	1,200	600
Cooperative Fire Control Program	Acres	51,800	94,000
Total			709,700

1/ Price base 1975

2/ Wildlife habitat preservation

February 1976

SHORT-TERM VS. LONG-TERM USE OF RESOURCES

Many acres of forest land have been cleared since the watershed was settled. However, over 40 percent of the watershed area is still in forest land. Some additional forest is expected to be cleared, but at a slower rate than in the past. There is expected to be some increased residential and commercial development, especially in the vicinity of Port Allen; however, this is not expected to occur on a large scale.

The level of drainage and flood protection provided by the project will improve field conditions which will allow for higher crop yields, elimination of unnecessary costs, and better quality of products. These conditions will induce farmers to apply more measures and practice better conservation. The increased application of land treatment measures will insure sustained production for future generations. Since the major land uses are agriculture and forestry, and this is not expected to change, the project is compatible with the long-term uses of the land and water. The maintenance involved in the project will make it effective in conserving land and water resources after its designed 50-year life unless new varieties of crops and methods of farming are developed which would require different levels of protection.

Choctaw Bayou Watershed is located in the Lake Maurepas Subregion of the Lower Mississippi Region. The subregion includes four soil and water conservation districts and parts of two others. About 24 percent of the land area in the Lake Maurepas subregion is in some stage of development planning, or requesting assistance under Public Law 566.

Approximately 15 percent of the total land area in the Lower Mississippi Water Resource Region is covered by Public Law 566 projects which are either installed or approved for planning. The status of Public Law 566 projects can be observed in the tabulation on the following page.

Extensive flood control measures other than Public Law 566 projects have been installed throughout the Lower Mississippi Region. Approximately 35,000 square miles of the region would be overflowed by a great flood on the Mississippi River if it were not for a system of main line and backwater levees, floodways, reservoirs, and channel works. As a result of these improvements, approximately 24,000 square miles receive essentially complete protection from flooding from the Mississippi River and about

STATUS OF PUBLIC LAW 566 PROJECTS

Item	Projects Installed		Projects Approved For Planning		Project Applications Received		Total	
	(No.)	(Acres)	(No.)	(Acres)	(No.)	(Acres)	(No.)	(Acres)
Lower Mississippi Water Resource Region								
Louisiana	6	296,590	21	2,819,270	7	531,820	34	3,647,680
All Other States	19	501,044	40	6,946,689	Not Tabulated		59	7,447,733
Total	25	797,634	61	9,765,959	7 a/	531,820 a/	93 a/	11,095,413
Lake Maurepas Subregion Resource Subregion								
Louisiana	1	43,800	5	480,800	2	258,400	8	783,000
Total	1	43,800	5	480,800	2	258,400	8	783,000

a/ Does not contain applications received for states other than Louisiana.

3,600 square miles in backwater areas and floodways receive a lesser degree of protection. In addition, systems of reservoirs, levees, and channel works reduce or prevent headwater flooding.

This project and other similar projects will reduce the amount of sediment delivered to the Gulf Intracoastal Waterway, Morgan City-Port Allen Route, when land treatment measures are installed. This is considered a long-term effect, as the reduction in sediment would begin within a year after construction begins and would continue throughout the project life.

Project channel installation will not cause measurable stage increases downstream.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

About 20 acres of land within ephemeral, intermittent, and ponded channels will be committed to permanent water for at least the life of the project. Structures for water control (weirs) will be located in the channel rights-of-way, so no additional land will be required.

The project will require an additional 402 acres for rights-of-way. This will cause a reduction in open land of 246 acres, in forest land of 106 acres, and in wooded channel banks of 50 acres. This increase in rights-of-way will require an additional 42 acres for channel area, 212 acres for berm, and 148 acres for spoil.

Channels have to be maintained and kept clear of obstructions in order to function as planned. As a result, channels will preclude the use of 506 acres of land for any other purpose for at least the life of the project. Grasses and forbs will be allowed to grow in the channels and on the berms. One side of the channels in forest land or with woody channel banks will not be disturbed during construction or the life of the project. Selected trees will be allowed to remain on the berms and none in the channels on the side being disturbed since maintenance equipment access will be necessary. (See appendix F, figures 5 and 6.) Spoil areas in the forest land will be planted with hardwood seedlings. The berm and spoil in the open land will be used generally as part of the farm road system, but may be used for other purposes.

About $5,609,000 will be expended for project installation, which includes land treatment and structural measures. Project installation expenditures for items such as labor, fuel, equipment, sand, gravel, cement, and steel, cannot be reversed.

CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES

At several regular meetings, the Upper Delta Soil and Water Conservation District Supervisors recognized and discussed the need for improved drainage and flood prevention in the Choctaw Bayou Watershed. As a result of these discussions, the Upper Delta Soil and Water Conservation District, the West Baton Rouge Parish Police Jury, and the Pointe Coupee Parish Police Jury drafted a watershed application for Public Law 566 assistance and submitted it to the Louisiana Soil and Water Conservation Committee on December 9, 1964. The application was approved by this committee on December 22, 1964 and forwarded to the Soil Conservation Service.

During the month of January 1965, the U.S. Army Corps of Engineers, New Orleans District, was requested by the State of Louisiana, Department of Public Works, through the president, Mississippi River Commission, to consider the enlargement of Choctaw Bayou and Tributaries as necessary to provide adequate outlets for the watershed. The U.S. Army Corps of Engineers contacted the Soil Conservation Service in order to coordinate efforts and to avoid possible overlap or duplication in planning. A report concerning conditions in the watershed was prepared by the Soil Conservation Service in response to the request from the U.S. Army Corps of Engineers.

Authorization to provide planning assistance under provisions of Public Law 566 was requested January 28, 1968. Watershed planning was authorized September 9, 1968. The Soil Conservation Service notified the Sponsors, participating agencies, and other interested parties of this authorization.

Representatives of the three Sponsors, the Department of Public Works, and the Soil Conservation Service met on October 17, 1968 for the purpose of discussing planning problems and various responsibilities by each. Coordination between the Department of Public Works and the Soil Conservation Service continued at a meeting in New Roads, Louisiana on December 13, 1968.

A work outline for development of the watershed plan was made and concurred in by participating agencies. The Sponsors prepared a map of the watershed showing channels (about 170 miles) that they would like investigated for inclusion in the watershed plan. Also, shown on this map is the area designated first priority for construction.

On January 22, 1969, representatives of the Soil Conservation Service, U.S. Fish and Wildlife Service, and the Louisiana Wild Life and Fisheries Commission, made a reconnaissance of the Choctaw Bayou Watershed for the purpose of reviewing wildlife resources and probable effects that the proposed waterhsed work would have on these resources.

The group recommended that the existing water level be maintained in Lake Clause. This lake is in the northeastern portion of the watershed and is a valuable wocd duck habitat. Also, it has the advantage of offering habitat areas for various types of waterfowl, game animals and fish. This could be accomplished in two ways: (1) A water control structure could be installed at the outlet end of the lake or (2) the drainage could be routed around the periphery of the lake and the spoil used to construct a levee on the lake side.

The official report from the U.S. Fish and Wildlife Service dated July 22, 1970 agreed with the Lake Clause recommendation and identified another area of high value for wildlife. It is a wetland area adjacent to Bayou Tommy in the southwest part of the watershed. Construction procedures were recommended for this and other forested areas of the watershed. The Louisiana Wild Life and Fisheries Commission concurred in this report.

Following another joint field reconnaissance by biologists representing the same three agencies, an amendment to the official report was made on May 24, 1972. Further recommendations concerning work on Channels L-3, L-11, L-6, L-6A, and W-1 were made. It was found that all of these recommendations could not be followed. The excavation of Channel L-3 is necessary for benefits to be derived. A stop log weir is planned in this channel. This weir will prevent any change in Lake Clause. It was found to be less damaging to wildlife habitat to excavate Channel L-11 rather than to divert flows through Channels L-9A, L-9, and W-1 back to the original discharge point of Channel L-11. It is hydraulically and physically impractical to divert the flow from the upper reaches of Channel L-6 east along U.S. Hwy. 190 to Channel W-1. It was found that even though flows from the upper reaches of Channel L-6 were diverted as suggested. the lower reaches of Channel L-6 (Bayou Tommy) would require excavation in order for benefits to be derived. After several conferences with personnel of the U.S. Fish and Wildlife Service concerning this channel, a specific construction procedure as described in the plan, with two structures for water control (weirs) stratigically placed, was decided on as the least damaging to the environment if the channel is to be excavated.

The U.S. Forest Service working with the Soil Conservation Service made a study of forestry resources in the watershed and developed inputs for the watershed plan.

The Louisiana Historical Preservation and Cultural Commission and the Division of Anthropology and Geography of the Louisiana State University were consulted for any know archaeological, historical, or natural sites in order to determine their location in relation to proposed project channels.

Collaboration with the Louisiana Department of Public Works was carried out on a continuing basis throughout the planning process. This involved engineering surveys, channel designs, and locations.

Throughout the course of planning, project effects by all participating agencies remained under consideration. Coordination among all agencies was maintained to develop a unified plan.

A public meeting was held on May 20, 1975 in the courtroom of the West Baton Rouge Parish Courthouse in Port Allen, Louisiana. The Soil Conservation Service reviewed the history of flooding and inadequate drainage in the watershed, and the steps the Sponsors had made to receive planning assistance under Public Law 566. Planning had progressed to a point where alternatives were being developed. These alternatives were presented. An opportunity was provided for public espression of additional alternatives and ideas to be studied. Information that would assist in assessing economic, social, and environmental impacts was requested.

On November 24, 1975, another public meeting was held at the same place, for the purpose of presenting the watershed plan and environmental impact statement. Basically, the selected alternative and the impact upon the watershed environment was presented. Additionally, the meeting was held so that everyone involved could keep up with the progress made, and comment on the plan and environmental impact statement. The Soil Conservation Service reviewed the steps to be taken from this point forward.

The agencies, organizations, and individuals listed below were asked to comment on the draft environmental statement:

Fish and Wildlife Service (USDI)
Bureau of Outdoor Recreation (USDI)
Agricultural Stablization and
  Conservation Service (USDA)
Office of Equal Opportunity (HEW)
Advisory Council on Historic
  Preservation
Department of Commerce *
Department of the Interior *

Geological Survey (USDI) *
Coast Guard (DOT)
Farmers Home Administration (USDA)
Environmental Protection Agency *
National Marine Fisheries Service (NOAA) *
National Park Service (USDI)
Federal Power Commission
Department of the Army (DOD) *
Corps of Engineers, New Orleans District (DA)
Department of Health, Education,
and Welfare
Federal Highway Administration (DOT) *
Archaeological Survey and
Antiquities Commission
Department of Agriculture
Wild Life & Fisheries Commission *
State Art, Historical and
Cultural Preservation Agency *
Soil & Water Conservation Committee
Commission on Intergovernmental
Relations *
Geological Survey (State)
Louisiana Health and Human Resources Administration *
Bureau of Environmental Health,
Water, and Air Quality
Joint Legislative Committee
on Environmental Quality
Agricultural Stabilization and
Conservation Committee
Department of Public Works
Department of Highways
Department of Conservation
Forestry Commission
State Parks and Recreation Commission
Stream Control Commission
Cooperative Extension Service
Louisiana State University
Curator of Anthropology
Center for Agricultural Science
and Rural Development
Marine Environmental Researchers
Atchafalaya Basin Division (DPW)
Office of State Planning
Governor's Council on Environmental
Quality
Sierra Club, Delta Chapter
Louisiana Wildlife Federation Water
Control Projects Committee
Orleans Audubon Society
Izaak Walton League

Natural Resources Defense Council
Environmental Defense Funds
National Audubon Society
Clifford Danby
Daily Word, Opelousas
Louisiana Farm Bureau
Louisiana Wildlife Federation,
President
Louisiana Forestry Association
Wildlife Management Institute
(Tennessee)
Friends of the Earth
National Wildlife Federation
Environmental Impact Assessment
Project
Coastal Resources Law LSU & A&M College

* Responded to request for comments.

Discussion and Disposition of Each Comment on Draft Statement

Each issue, comment, or suggestion for improvement is summarized and a response is given on the following pages. Comments are numbered where agencies have supplied multiple comments. The original letters of comment appear in Appendix C.

The page numbers in the "Comments" are those used in the December, 1975 Watershed Plan and Draft Environmental Impact Statement. Page numbers in the "Responses" are those used in the Final Environmental Impact Statement.

United States Department of the Interior, Office of the Secretary

Our review has revealed some omissions and deficiencies which should be corrected before the documents are finalized. Specific comments arranged by page number are presented below.

Comment No. 1: Page II-12, paragraph 1. The methods to be used to insure that the individual land owners develop the 400 acres of plantings for wildlife food and cover should be described.

Response: The description can be found in the first and fourth paragraphs on page II-12.

Comment No. 2: Page II-40, paragraph 2. The description of the drainage system beyond the boundary of the watershed is inadequate. The water from the Choctaw Bayou Watershed will flow through numerous channels and lakes enroute to the Gulf of Mexico. This drainage system should be described.

Response: The last part of the paragraph has been rewritten to include (1) the elimination of the last sentence, (2) the addition of "which is a man-made waterway.", after Intracoastal Waterway, Morgan City-Port Allen Alternate Route, and (3) the following sentence:

This borrow channel flows southeast to the Lower Grand River, which flows southeast to a complex of interconnecting channels and lakes including Lake Verret, Belle River, Lake Palourde, Bayou Boeuf, Bayou Shaffer, Lower Atchafalaya River, and to the Atchafalaya Bay, into the Gulf of Mexico.

Comment No. 3: Page II-58 Archeological, Historical, and Unique Scenic Resources. The final environmental statement should name the archeologist who surveyed the construction areas for Louisiana State University and include his report as an appendix.

Response: The Curator of Anthropology is named and his report is incorporated into the document on page II-48. It is as follows:

The archaeological investigations within the entitled study area were accomplished in two phases. Phase I consisted of archival research in which historical documents, maps, previous archaeological records and aerial mosaics were examined. The Louisiana Department of Art, Historical and Cultural Preservation was also consulted and no National Register sites or sites proposed for the National Register will be affected by the proposed structural measures.

The second phase of the investigations, between August 18th and October 26, 1975 consisted of a field survey conducted by Robert W. Neuman, Curator of Anthrolopology, Louisiana State University along all of the proposed routes of the specified projects in the watershed. No archaeological deposits were located that will be affected by the structural measures.

Comment No. 4: Page II-87. The West Baton Rouge Parish Police Jury has proposed the acquisition of 20 acres of land located in the northern part of district #4 of West Baton Rouge Parish. This land is to be developed into a park. The location of the proposed park acquisition is near multipurpose channel L-3A6 as depicted on the project map of the subject document. It is suggested that a statement be made with regard to possible impacts of the proposed watershed project on the proposed land acquisition for recreational purposes.

Response: The West Baton Rouge Parish Police Jury does plan to acquire some land for development into a park. The 20 acre site in question is one of several sites being considered. A statement on a possible impact can not be made, however, if this site is selected the position of the Police Jury is that the proposed drainage provided would enhance acquisition position. This was concurred with by the Louisiana State Park and Recreation Commission.

Comment No. 5: Page II-94, paragraph 5. This paragraph and the table on II-95 describe increased peak stages at selected points in channels within the Choctaw Bayou Watershed. However, no mention is made of any stage increases beyond the limits of the watershed. The watershed drainage will affect an extensive area as it flows to the Gulf of Mexico. The impacts of the runoff from the Choctaw Bayou Watershed on peak stages in this downstream area should be discussed along with the effect of the runoff from the currently active Bayou Grosse Tete and Lake Verret Watershed projects which drain into the same area.

Response: The cumulative effects of Project Measures in the Bayou Grosse Tete, Choctaw Bayou and Lake Verret Watersheds on downstream waters are so small that no meaningful quantitative analyses of these effects are feasible, for the following reasons:

(1) The volume of runoff will not change.

(2) Changes in stages and discharges at the watershed outlets are minor, if any. In each case the estimated change in maximum stage for any storm that produces out-of-bank flow is less than .05 foot, and the estimated change in maximum discharge is less than 50 cubic feet per second.

(3) Changes in stages and discharges diminish progressively in absolute quantity in a downstream direction as a result of the massive storage effect of lakes, swamps, and marshes.

(4) For individual events, the net results of interactions of altered and unaltered hydrographs on absolute values of changes in the composite hydrograph configurations would never exceed the changes in the altered subhydrographs,

and would almost always be less in varying degrees. On some occasions the net changes in the composite hydrographs would be in the opposite direction from the changes in the altered subhydrographs.

(5) The probable error involved in any conceivable model for determining downstream discharges would far exceed the differences in discharge.

Comment No. 6: Pages II-96-II-102, Erosion and Sediment. This section contains considerable discussion of the effects of construction on fish and wildlife habitat. It would improve the environmental impact statement if such discussion was placed under a separate heading.

We suggest that measures to minimize adverse effects on the physical water quality (increased sediment load) of surface water during channel excavation be considered.

Neither the watershed plan nor the draft statement indicates any consideration of impacts on ground-water resources. The action involves rather extensive (70 miles) channel excavation or modification, including nine miles of work on previously unmodified natural channels, and accelerated land-treatment measures. Proposed land-treatment measures will include construction of drainage ditches and improvement of infiltration possibilities that should have appreciable impacts on ground water, especially in unconfined acquifers, such as changes in regional water levels, storage and quality of water. These effects should be evaluated. Channel work will result in six miles of ponding in previously ephemeral stream reaches, promotion of drainage in other areas, and changed flow patterns in much of the project area intended to aid in flood prevention. Changes in the surface-water regimen that will be accompanied by ground-water effects, particularly in unconfined aquifers, such as declining or rising water table, should also be appraised in the statement.

Response: Beginning with paragraph 1, Page II-86 ... "The installation of the stop log weir in Channel L-3 ... has been placed under the subtitle, Fish and Wildlife."

The paragraph beginning ... "Three weirs will"... is omitted and the following rewrite is substituted:

The acceleration of land treatment measures to be put on the land will reduce sheet erosion causing a reduction in sediment delivered within channels and downstream. The practice of construction from one side of channels will reduce the amount of construction induced sediment. The two weirs on Channel L-6 will trap some construction sediment as they are planned to be installed prior to channel excavation. Additionally, this trapping will reduce some plant nutrients downstream during periods of low flow.

Land treatment measures will increase the infiltration rate which will aid in the recharge of the unconfined aquifer. A consideration that must be made when assessing the ground water effect is that the Mississippi River is hydraulically connected with this unconfined aquifer and there is an exchange of water dependent on the stage of the river. There is no expected adverse effect of the project on the unconfined aquifer. The amount of seep water within the soil profile during periods of high water on the Mississippi River will cause a favorable effect by removal of seep water in channel bottoms affected by the unconfined aquifer. Seepage water was considered in channel design.

Comment No. 7: Page II-103, first paragraph. The effect of the project upon known archeological sites is stated. There should also be a discussion in the final statement of actions that will be taken to mitigate adverse effects upon any archeological material encountered during construction.

Response: The answer to the disposition of archaeological material encountered during construction is given on page II-90.

Comment No. 8: Page II-102, paragraph 2. The discussion of the impacts of a diversion channel from Bayou Tommy to Bayou Cholpe is insufficient. The adjacent forest land will not receive as much overbank flow from the bayou as it presently does. Also, that portion of Bayou Tommy downstream from the diversion point will be deprived of drainage from the upper bayou. This latter occurrence could adversely affect the lower stream ecosystem as it now exists since the vegetation in the bayou would be deprived of a portion of its

water source. The diversion has the potential to be damaging to fish and wildlife resources in the area, therefore, the impacts of this damage should be discussed.

Response: The last paragraph in this section was deleted and the following data was inserted as the last of the Fish and Wildlife section:

The forest land adjacent to Bayou Tommy and downstream from the upper weir will not receive as much overbank flow as it does now. Also, the channel of Bayou Tommy downstream from the diversion will receive less runoff and have less frequent flow than it does now. Approximately 1.4 inches of rainfall will be required to produce flow in Bayou Tommy below the diversion. Normally, this amount of rainfall will be equalled or exceeded 16 times during a year and will occur at least once every month except October.

Hardwoods are benefited by periodic flooding during their dormant period. Studies have shown that radial tree growth increases as a result of periodic flooding. Also, mast production will probably be increased. The reduction of overbank flooding along Bayou Tommy could cause a reduction in tree growth and mast production for the adjacent forest land.

Efforts will be made to avoid creating conditions which will increase populations of vectors which in turn affect human health condition. For example, openings will be provided in the new sections of spoil to prevent standing, trapped water. These openings will help reduce mosquito production areas. Also, the clearing of channels should reduce mosquito production sites within the channels. The two project weirs will create 20 surface acres of ponded water which could produce conditions favorable for mosquito production. However, water behind the project weirs is expected to contain gambusia (mosquito fish) and other aquatic organisms that feed on mosquito and their larvae. If the natural controls are not effective at all times, additional prevention and control measures can be implemented in cooperation with appropriate Federal, State, and local health agencies. Implementation of this project with careful attention to vector and rodent control can result in an overall beneficial impact.

United States Department of Commerce, The Assistant Secretary for Science and Technology

Comment No. 1: The Final Environmental Impact Statement (FEIS) should list and describe all existing and proposed local, State and Federal flood prevention, drainage and navigation projects in the 1,800,000 acre drainage area lying between the East Atchafalaya Basin Protection Levee and the Mississippi River and Bayou Lafourche from Morganza, Louisiana, to the Gulf of Mexico. The cumulative effects of the existing and proposed projects on the fishery resources of downstream estuarine areas should be thoroughly discussed. The FEIS should compare the quantity and quality of freshwater discharge prior to development of the watershed with the current discharge and the discharge expected on project completion. Also, the effects of freshwater discharge should be discussed relative to changes in salinity regimes downstream and subsequent effects on aquatic organisms. The FEIS should further discuss the effects of increased runoff of fertilizers, pesticides, herbicides, nutrients, detritus, and sediment on aquatic biota in the watershed and the estuary.

Response: We feel that this Environmental Impact Statement addresses the environmental impacts that are within the scope of P.L. 566 watershed planning. (Refer to the Environmental Protection Agency comment and our response concerning water quality.)

Projects of other agencies that directly relate to this project are described on pages II-44, II-49, and II-50.

United States Department of the Interior, Geological Survey

With respect to the hydrologic information presented, we fine these to be reasonably accurate and adequate in hydrologic information; however we do have the following comments:

Comment No. 1: Page II-38, last paragraph. The city of Port Allen obtains municipal water from three wells.

Response: Data has been updated.

Comment No. 2: Page II-39, chemical analysis. Carbon dioxide (CO_2), calculated equals 1.7 ppm; also, unit (ppm) for most constituents is not shown.

Response: Data has been updated.

U.S. Department of Transportation, Federal Highway Administration

The identification of work on the State Highway System has been addressed and coordination with Louisiana Department of Highways has been indicated to occur at an appropriate time if the project is implemented.

Comment No. 1: Coordination should include both replacement and modifications to drainage facilities.

Response: Adequately covered on page II-17.

U.S. Environmental Protection Agency

Comment No. 1: On page II-82 it is noted that ammonia nitrogen, nitrate nitrogen and orthophosphate concentrations were above levels for unpolluted waters based on interpretations from Louisiana water quality standards. However, the water quality data on page II-53 also indicate that dissolved oxygen concentrations at Station 2 (Lake Clause) were 3 mg/l over the 5-month sampling period. This value is below the recommended Louisiana standard of 5 mg/l for diversified warm water biota. Additional information discussing the factors affecting dissolved oxygen concentrations in Lake Clause should be included in the statement.

Response: The first paragraph in Water Quality Problems, Page II-71, was revised to read as follows:

Water quality for the project area is satisfactory for agricultural uses, secondary recreation, and propagation of fish and wildlife, and is within guidelines established by the Louisiana Stream Control Commission for the present uses of the water resources with the exception of Lake Clause. Lake Clause had dissolved oxygen levels below the recommended Louisiana standard of 5 mg/l for 9 months of a 12 month sampling period. Several factors account for the low dissolved oxygen. Lake Clause if very shallow resulting in uniform high water temperature during the warm months.

The solubility of oxygen decreases with high water temperatures. Lake Clause is completely surrounded by a dense growth of trees and shrubs. This situation inhibits wind from causing wave action which is a major source of oxygen. Duckweed completely covers the surface and also limits water surface distrubances. Heavy growths of aquatic macrophytes such as najas, coontail, and muskgrass further deplete oxygen when most of their annual growth is killed during winter months and decomposition occurs over an extended period of time. A large rookery of wading birds is present and the decompostion of wastes from these birds also reduces the dissolved oxygen. A combination of all these facts results in a high chemical oxygen demand (COD) and biochemcial oxygen demand (BOD) for Lake Clause. Even though the water quality of Lake Clause is below that needed to support a diversified warm water biota, other habitat qualities make it a high value wetland area. Refer to Water Quality Criteria for Choctaw Bayou, Appendix I.

Comment No. 2: The statement mentions (page II-94) that agricultural fertilizer use will increase by an estimated 28 percent, or 300 tons annually. The final statement should estimate the incremental effect this increase could have on future nutrients levels (orthophosphate and nitrogen) within the watershed, and on the receiving stream (G.I.W.W.). As mentioned in the statement, undesirable aquatic plant growth may occur periodically in the watershed. A discussion of the effects of increased nutrient concentrations within the watershed (aquatic plant growth euthrophication, algal blooms, oxygen depletion) would strengthen the statement.

Response: The following three paragraphs were added on pages II-83 and II-84:

Studies have shown that following application, agricultural chemicals are lost from the soil through: surface runoff, sediment loss, volatilization, organism uptake, and degradation (microbial, photochemical, chemical). The relative significance of the various mechanisms is highly dependent on existing environmental conditions and type of chemical. Movement of agricultural chemicals to water courses is of primary environmental concern because of possible effects on the aquatic ecology. Other than direct application, surface

runoff and sediment transport have been recongnized as the major routes of these chemicals to an aquatic environment.

However, increased use of soil conserving practices and engineering structures by landowners under the accelerated land treatment program will reduce the annual soil loss and reduce runoff which will reduce the amount of agricultural chemicals entering the aquatic environment. Studies have shown that proper soil conservation practices will reduce erosion and sediment delivery rates. The amount of sediment coming from watersheds having good conservation treatment at the Blackland Experimental Watershed, near Riesel, Texas, is only 12 percent of that from watersheds farmed without soil conserving practices.

Based on these studies the project should reduce the transport of agricultural chemicals to aquatic systems. In addition to the physical soil conservation practices which will be implemented as a result of the project, proper application rates at the correct times will be encouraged. Application rates and soil conserving practices have a significant influence on the amount of agrichemicals that enter the natural environment.

State Art, Historical and Cultural Preservation Agency

Comment: I have reviewed the Draft Environmental Impact Statement (DES) for the above reference project and I have determined that the DES appears adequate in its treatment of cultural resources.

This agency has no further comment at this time.

Thank you for the opportunity to comment on this project.

Response: None necessary.

State Commission on Intergovernmental Relations

Comment: We have received the Draft Environmental Impact Statement for the Choctaw Bayou Watershed project with respect to agency impact and responsibility.

This is to notify you that we concur with your selection of state agencies requested to review and comment on the document as indicated in your letter of January 9, 1976, and we have no additions to recommend.

A copy of the Statement will be retained in our office and is available for public inspection, and a Notice of Availability will be published in our newsletter.

Response: None necessary.

Louisiana Health and Human Resources Administration

Comment: The Choctaw Bayou Watershed Work Plans and the Draft Environmental Impact Statement (E.I.S.) have been reviewed by this office for probable effects upon insect vector control. It is our opinion that implementation of the project with careful attention to details which can effect the ecology of insect and other vectors of disease can have an overall beneficial result. For example, the clearing of channels should reduce mosquito production sites within the channels and within areas which are relieved of periodic regular flooding.

On the other hand, improper attention to appropriate details can greatly increase vector problems. Primarily, water resources and related land developments frequently enhance natural attractions causing greater usage; ergo, greater exposure of the people to vectors and poisonous and urticating organisms which naturally inhabit such areas.

Spoil, improperly placed, can create ponding increasing mosquito breeding areas. Hydraulic fill material can form numerous cracks upon drying - cracks which contain water and breed mosquitoes at a rate vastly greater than that which occurred in the undisturbed condition. Further, shallow water bodies which favor production of mosquitoes and certain other bloodsucking insects may be created. For example the 20 surface acres of ponded water averaging 2 feet deep for a length of 6 miles (page I-66) which will be created by 2 weirs could produce prodigious populations of mosquitoes. Proper management, however, such as water level fluctuation at the right time and to the right extent might prevent or control such a problem.

An improperly located or poorly constructed pond or field has little chance of producing more than 100 - 200 pounds per acre. Well constructed and properly managed ponds or fields commonly produce 500 - 700 pounds per acre.

Data on the American alligator was revised as follows on page II-47, paragraph 2:

The American alligator is found in the project and is on the "List of Endangered Fauna." In September, 1975 the alligator was removed from endangered status in Calcasieu, Cameron, and Vermilion Parishes and a controlled hunting season has been established in order to thin excessive populations of alligators in these parishes.

Department of the Army (DOD)

Comment No. 1: We have reviewed the work plan and foresee no conflict with any projects or current proposals of this Department.

Response: None necessary.

Comment No. 2: The draft environmental impact statement is considered generally satisfactory.

Response: None necessary.

Comment No. 3: The Upper Delta Soil and Water Conservation District should be informed that regulatory permits will be required from work that affects navigable waters and requests for such permits should be made to the New Orleans District office of the Corps of Engineers at the earliest possible date.

Response: It is stated in the Watershed Plan in the paragraph on the top of page I-24 the necessary permits will be obtained.

The foregoing is to emphasize that water resources developments and vectors go hand in hand. The E.I.S. reviewed herein makes no mention, whatever, of this factor and leaves one to conclude that this major health and environmental area may have been completely overlooked. We fine no fault with the concern for wildlife, even the least consequential forms considered by the E.I.S., but submit that human health and well being must also be addressed.

Response: The following paragraph was inserted on page II-90.

Efforts will be made to avoid creating conditions which will increase population of vectors which in turn affect human health conditions. For example, openings will be provided in the new sections of spoil to prevent standing, trapped water. These openings will help reduce mosquito production areas. Also, the clearing of channels should reduce mosquito production sites within the channels. The two project weirs will create 20 surface acres of ponded water which could produce conditions favorable for mosquito production. However, water behind the project weirs is expected to contain gambusia (mosquito fish) and other aquatic organisms that feed on mosquito and their larvae. If the natural controls are not effective at all times, additional prevention and control measures can be implemented in cooperation with appropriate Federal, State, and local health agencies. Implementation of this project with careful attention to vector and rodent control can result in an overall beneficial impact.

Louisiana Wild Life and Fisheries Commission

Comment No. 1: Alterations to Bayou Tommy can be expected to bring about some degradation of the natural environment directly by construction damages and indirectly by the possible inducement of land clearing.

Response: This comment is answered in the U.S. Department of the Interior, Office of the Secretary response, Comment, No. 8.

Comment No. 2: We suggest that our comments concerning forest soils crawfish production and the American alligator status as listed on page 2 of our letter of September 17,1975 to you concerning this project be used to clarify the specific points mentioned.

Response: Crawfish production data was changed as follows on page II-98, paragraph 3:

LIST OF APPENDIXES

Appendix A - Comparison of Benefits and Costs

Appendix B - Project Map

Appendix C - Letters of Comment Received on Draft Environmental Impact Statement (Final Draft)

Appendix D - Operation and Maintenance Agreement for Structural Measures

Appendix E - Bibliography

Appendix F - Figures

Appendix G - Interpretations of Water Quality Parameters

Appendix H - Common and Scientific Names of Plants and Animals Mentioned in this Environmental Impact Statement

Appendix I - Water Quality Criteria for Choctaw Bayou

Appendix J - Channel Work by Reaches

Approved by: Alton Mangum
Alton Mangum
State Conservationist

Date: 3-25-76



APPENDIX A

COMPARISON OF BENEFITS AND COSTS

APPENDIX A

COMPARISON OF BENEFITS AND COSTS

Choctaw Bayou Watershed, Louisiana

(Dollars)

Evaluation Unit	Average Annual Benefits					Total	Average Annual Cost 3/	Benefit Cost Ratio
	Damage Reduction 1/	More Intensive Land Use 1/	Drainage 1/	Employment 2/	External Economies 1/			
I	31,400	6,400	28,600	-	11,100	77,500	12,200	6.4:1
II	192,500	39,000	175,000	-	51,700	458,200	53,800	8.5:1
III	42,500	8,500	38,600	1,400	18,100	109,100	35,300	3.1:1
IV	82,200	16,500	74,700	3,500	30,900	207,800	23,000	9.0:1
V	102,400	20,700	93,100	4,600	25,900	246,700	46,000	5.4:1
Project Administration	xxx	xxx	xxx	xxx	xxx	xxx	14,800	xxx
GRAND TOTAL	451,000	91,100	410,000	9,500	137,700	1,099,300	185,100	5.9:1

1/ Price base: Current normalized prices, October 1974.

2/ Price base: 1975 prices.

3/ Price base: Installation cost - 1975 prices amortized for 50 years at 5.875 percent; operation and maintenance cost - 1975 prices.

February 1976

APPENDIX B

PROJECT MAP

U S DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE ALEXANDRIA LOUISIANA



LEGEND

- Interstate Highway
- US Highway
- State Highway
- Primary Road
- Divided Highway
- City Limits
- Town
- Parish Boundary
- Railroad
- Power Line
- Pipe Line
- Watershed Boundary
- Multipurpose Channel to be Worked (Excavation)
- Multipurpose Channel to be Worked (Clear Only)
- Adequate Channel
- Evaluation Unit Boundary
- USCE Channel
- Structure for Water Control (Wells)
- Benefited Area

N

PROJECT MAP
CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE PARISHES, LOUISIANA

0 1 2 3 4 MILES
APPROXIMATE SCALE

POLYCONIC PROJECTION COMPILED AT 1:62,500 (1 INCH EQUALS 0.986 MILES) AND REPRODUCED AT 1:125,000 (1 INCH EQUALS 1.973 MILES)

BASE COMPILED FROM USGS QUADRANGLE SHEETS

SOURCE: Data compiled by SCS Watershed Planning Staff.

JULY 1975 4-R-35036
JULY 1975 BASE 4-R-35022

USDA-SCS-FORT WORTH, TEX., 1975

APPENDIX C

LETTERS OF COMMENT RECEIVED ON DRAFT ENVIRONMENTAL IMPACT STATEMENT

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer
to: ER-75/1180

AN 29 1976

Dear Mr. Mangum:

Thank you for the letter of December 5, 1975, requesting our views and comments on the draft environmental statement for Choctaw Bayou Watershed, West Baton Rouge, Pointe Coupee, and Iberville Parishes, Louisiana. Our review has revealed some omissions and deficiencies which should be corrected before the documents are finalized. Specific comments arranged by page number are presented below.

Page II-12, paragraph 1

The methods to be used to insure that the individual land owners develop the 400 acres of plantings for wildlife food and cover should be described.

Page II-40, paragraph 2

The description of the drainage system beyond the boundary of the watershed is inadequate. The water from the Choctaw Bayou Watershed will flow through numerous channels and lakes en-route to the Gulf of Mexico. This drainage system should be described.

Page II-58 Archeological, Historical, and Unique Scenic Resources

The final environmental statement should name the archeologist who surveyed the construction areas for Louisiana State University and include his report as an appendix.

Page II-87

The West Baton Rouge Parish Police Jury has proposed the acquisition of 20 acres of land located in the northern part of district #4 of West Baton Rouge Parish. This land is to be developed into a park. The location of the proposed park acquisition is near multipurpose channel L-3A6 as depicted on the project map of the subject document. It is suggested that a statement be made with regard to possible impacts of

the proposed watershed project on the proposed land acquisition for recreational purposes.

Page II-94, paragraph 5

This paragraph and the table on II-95 describe increased peak stages at selected points in channels within the Choctaw Bayou Watershed. However, no mention is made of any stage increases beyond the limits of the watershed. The watershed drainage will affect an extensive area as it flows to the Gulf of Mexico. The impacts of the runnoff from the Choctaw Bayou Watershed on peak stages in this downstream area should be discussed along with the effect of the runoff from the currently active Bayou Grosse Tete and Lake Verret Watershed projects which drain into the same area.

Pages II-96-II-102, Erosion and Sediment

This section contains considerable discussion of the effects of construction on fish and wildlife habitat. It would improve the environmental impact statement if such discussion was placed under a separate heading.

We suggest that measures to minimize adverse effects on the physical water quality (increased sediment load) of surface water during channel excavation be considered.

Neither the watershed plan nor the draft statement indicates any consideration of impacts on ground-water resources. The action involves rather extensive (70 miles) channel excavation or modification, including nine miles of work on previously unmodified natural channels, and accelerated land-treatment measures. Proposed land-treatment measures will include construction of drainage ditches and improvement of infiltration possibilities that should have appreciable impacts on ground water, especially in unconfined aquifers, such as changes in regional water levels, storage and quality of water. These effects should be evaluated. Channel work will result in six miles of ponding in previously ephemeral stream reaches, promotion of drainage in other areas, and changed flow patterns in much of the project area intended to aid in flood prevention. Changes in the surface-water regimen that will be accompanied by ground-water effects, particularly in unconfined aquifers, such as declining or rising water table, should also be appraised in the statement.

Page II-102, paragraph 2

The discussion of the impacts of a diversion channel from Bayou Tommy to Bayou Cholpe is insufficient. The adjacent forest land will not receive as much overbank flow from the bayou as it presently does. Also, that portion of Bayou Tommy downstream from the diversion point will be deprived of drainage from the upper bayou. This latter occurrence could adversely affect the lower stream ecosystem as it now exists since the vegetation in the bayou would be deprived of a portion of its water source. The diversion has the potential to be damaging to fish and wildlife resources in the area, therefore, the impacts of this damage should be discussed.

Page II-103, first paragraph

The effect of the project upon known archeological sites is stated. There should also be a discussion in the final statement of actions that will be taken to mitigate adverse effects upon any archeological material encountered during construction.

We hope these comments will be of assistance to you in preparing your final documents.

Sincerely yours,

Stanley D. Boremus

Deputy Assistant Secretary of the Interior

Mr. Alton Mangum
Acting State Conservationist
Soil Conservation Service
Department of Agriculture
P.O. Box 1630
Alexandria, Louisiana 71301

United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
P.O. Box 66492
Baton Rouge, Louisiana 70896

January 22, 1976

Mr. Alton Mangum
Soil Conservation Service
P.O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

We have reviewed the environmental documents for the Bayou Gros Tete Watershed, Choctaw Bayou Watershed and Upper Pointe Coupee Loop Area/ Johnson Bayou Watershed with respect to the hydrologic information presented. We find these to be reasonably accurate and adequate in hydrologic information; we do have the following comments:

Bayou Gros Tete Watershed:

1. Page II-34, paragraph 2. Other municipalities in the watershed utilize ground water for domestic purposes.

2. Page II-38, paragraph 3. The alluvial aquifer is primarily used for agricultural purposes (exception--some individual domestic wells and some industrial cooling/washing wells). Ground water for most municipal and industrial purposes comes from deeper aquifers.

Choctaw Bayou Watershed:

1. Page II-38, last paragraph. The city of Port Allen obtains municipal water from three wells.

2. Page II-39, chemical analysis. Carbon dioxide (CO_2), calculated equals 1.7 ppm; also, unit (ppm) for most constituents is not shown.

Sincerely yours,

FOR THE DISTRICT CHIEF

Max J. Forbes, Jr.
Hydrologist

cc:
Regional Hydrologist, CR, WRD
Lakewood, Colorado MS 406
Mr. George H. Davis, WRD
Attn: G. H. Chase
Reston, Virginia MS 107

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION SIX

750 Florida Street
Baton Rouge, Louisiana 70801

January 1, 1976

IN REPLY REFER

Draft Plan and Draft Environmental
Impact Statement
Choctaw Bayou Watershed
West Baton Rouge, Pointe Coupee,
Iberville Parishes

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
P. O. Box 1630
Alexandria, Louisiana

Dear Mr. Mangum:

Your December 5, 1975, letter solicited comments regarding the subject Draft Environmental Statement.

The identification of work on the State Highway System has been addressed and coordination with Louisiana Department of Highways has been indicated to occur at an appropriate time if the project is implemented. Coordination should include both replacement and modifications to drainage facilities.

We wish to thank you for the opportunity to comment upon the proposed project.

Sincerely yours,

For: J. R. Skinner
M. C. Reinhardt
Division Administrator

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

February 2, 1976

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
Department of Agriculture
P. O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

This is in reference to your draft environmental impact statement entitled "Choctaw Bayou Watershed, Watershed Protection, Flood Prevention, and Drainage." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving four (4) copies of the final statement.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure - Memo from National Marine Fisheries Service, January 12, 1976

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Duval Building
9450 Gandy Boulevard
St. Petersburg, FL 33702

January 12, 1976 FSE21/GB

TO: Director
Ofc of Ecology & Environmental Conservation, EE
Robert C. Schneider JAN 13 1976
THRU: Associate Director for Resource Management
F3
FROM: William H. Stevenson
Regional Director

SUBJECT: Comments on Draft Environmental Impact Statement -- Choctaw Bayou Watershed - West Baton Rouge, Pointe Coupee, and Iberville Parishes, LA (SCS) (DEIS #7512.29)

The Draft Environmental Impact Statement for Choctaw Bayou Watershed-West Baton Rouge, Pointe Coupee, and Iberville Parishes, Louisiana, that accompanied your memorandum of December 15, 1975, has been received by the National Marine Fisheries Service for review and comment.

The statement has been reviewed and the following comments are offered for your consideration.

GENERAL COMMENTS:

The Final Environmental Impact Statement (FEIS) should list and describe all existing and proposed local, State and Federal flood prevention, drainage and navigation projects in the 1,800,000 acre drainage area lying between the East Atchafalaya Basin Protection Levee and the Mississippi River and Bayou Lafourche from Morganza, Louisiana, to the Gulf of Mexico. The cumulative effects of the existing and proposed projects on the fishery resources of downstream estuarine areas should be thoroughly discussed. The FEIS should compare the quantity and quality of freshwater discharge prior to development of the watershed with the current discharge and the discharge expected on project completion. Also, the effects of freshwater discharge should be discussed relative to changes in salinity regimes downstream and subsequent effects on aquatic organisms. The FEIS should further discuss the effects of increased runoff of fertilizers, pesticides, herbicides, nutrients, detritus, and sediment on aquatic biota in the watershed and the estuary.

cc: F34, NMFS, Washington, D.C. (3)
FSE212, Galveston, TX

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1600 PATTERSON
DALLAS, TEXAS 75201

January 30, 1976

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
P. O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

We have reviewed the Draft Environmental Impact Statement and Watershed Work Plan, Choctaw Bayou Watershed, West Baton Rouge, Pointe Coupee, and Iberville Parishes, Louisiana. The project is for watershed protection, flood prevention and drainage in West Baton Rouge and Pointe Coupee Parishes, Louisiana. The plan consists of clearing on 22 miles of channels and 70 miles of channel excavation. The majority of the work, 77 miles, is on channels which are manmade or previously modified. Six miles of new channels will be constructed.

The following comments should be considered in preparing the final statement:

1. On page II-82 it is noted that ammonia nitrogen, nitrate nitrogen and orthophosphate concentrations were above levels for unpolluted waters based on interpretations from Louisiana water quality standards. However, the water quality data on page II-53 also indicate that dissolved oxygen concentrations at Station 2 (Lake Clause) were 3 mg/l over the 5-month sampling period. This value is below the recommended Louisiana standard of 5 mg/l for diversified warm water biota. Additional information discussing the factors affecting dissolved oxygen concentrations in Lake Clause should be included in the statement.

2. The statement mentions (page II-94) that agricultural fertilizer use will increase by an estimated 28 percent, or 300 tons annually. The final statement should estimate the incremental effect this increase could have on future nutrient levels (orthophosphate and nitrogen) within the watershed, and on the receiving stream (G.I.W.W.). As mentioned in the statement, undesirable aquatic plant growth may occur periodically in the watershed. A discussion of the effects of increased nutrient concentrations within the watershed (aquatic plant growth, eutrophication, algal blooms, oxygen depletion) would strengthen the statement.

These comments classify your Draft Environmental Impact Statement as LO-2. Specifically, we have no objection to the project as proposed. However, additonal information on water quality is needed in the final statement. The classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible.

We appreciate the opportunity to review the Draft Environmental Impact Statement. Please send us two copies of the Final Environmental Impact Statement at the same time it is sent to the Council on Environmental Quality. If you should have any question concerning our comments, please let us know.

Sincerely yours,

John C. White
Regional Administrator

Enclosure

ENVIRONMENTAL IMPACT OF THE ACTION

LO - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects..

EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

STATE OF LOUISIANA

COMMISSION ON INTERGOVERNMENTAL RELATIONS

EDWIN EDWARDS
GOVERNOR
SENATOR MICHAEL H O'KEEFE
CHAIRMAN
LEON TARVER
EXECUTIVE DIRECTOR

P. O. Box 44455
Baton Rouge, Louisiana 70804
389-5664

January 13, 1976

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
U. S. Department of Agriculture
P. O. Box 1630
Alexandria, LA 71301

Dear Mr. Mangum:

We have reviewed the Draft Environmental Impact Statement for the Choctaw Bayou Watershed project with respect to agency impact and responsibility.

This is to notify you that we concur with your selection of state agencies requested to review and comment on the document as indicated in your letter of January 9, 1976, and we have no additions to recommend.

A copy of the Statement will be retained in our office and is available for public inspection, and a Notice of Availability will be published in our newsletter.

Sincerely,

DeWitt H. Braud, Jr.
Environmental Coordinator

DGBJr:bsm

HOUSE COMMITTEE
J. RICHARD BREAUX
ROBERT FREEMAN
T. W. HUMPHRIES
ALPHONSE JACKSON, JR
RICHARD THOMPSON

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DONALD W. WILLIAMSON

LOUISIANA HEALTH AND HUMAN RESOURCES ADMINISTRATION
DIVISION OF HEALTH
P.O. BOX 60630
NEW ORLEANS, LOUISIANA 70160

December 19, 1975

EDWIN EDWARDS
GOVERNOR

Mr. Alton Mangum
State Conservationist
P. O. Box 1630
Alexandria, Louisiana 71301

Re: Review of Vector Control Aspects
of Choctaw Bayou Watershed

Dear Mr. Mangum:

The Choctaw Bayou Watershed Work Plans and the Draft Environmental Impact Statement (E.I.S.) have been reviewed by this office for probable effects upon insect vector control. It is our opinion that implementation of the project with careful attention to details which can affect the ecology of insect and other vectors of disease can have an overall beneficial result. For example, the clearing of channels should reduce mosquito production sites within the channels and within areas which are relieved of periodic regular flooding.

On the other hand, improper attention to appropriate details can greatly increase vector problems. Primarily, water resources and related land developments frequently enhance natural attractions causing greater usage; ergo, greater expositure of the people to vectors and poisonous and urticating organisms which naturally inhabit such areas.

Spoil, improperly placed, can create ponding increasing mosquito breeding areas. Hydraulic fill material can form numerous cracks upon drying - cracks which contain water and breed mosquitoes at a rate vastly greater than that which occurred in the undisturbed condition. Further, shallow water bodies which favor production of mosquitoes and certain other bloodsucking insects may be created. For example the 20 surface acres of ponded water averaging 2 feet deep for a length of 6 miles (page I-66) which will be created by 2 weirs could produce prodigious populations of mosquitoes. Proper management, however, such as water level fluctuation at the right time and to the right extent might prevent or control such a problem.

The foregoing is to emphasize that water resources developments and vectors go hand in hand. The E.I.S. reviewed herein makes no mention, whatever, of this factor and leaves one to conclude that this major health and environmental area may have been completely overlooked. We find no fault with the concern for wildlife, even the least consequential forms considered by the E.I.S., but submit that human health and well being must also be addressed.

Thank you for providing us the opportunity to review the Work Plan and the Environmental Impact Statement for the Choctaw Bayou Watershed.

Yours very truly,

G. Roy Hayes, Jr., Administrator
Solid Waste and Vector Control Unit

GRH:mj

cc: West Baton Rouge Parish Health Unit
Pointe Coupee Parish Health Unit
Iberville Parish Health Unit
Mr. John Koury, Regional Engineer
Mr. Michael Mitternight
Regional Sanitarian
Mr. Paul Scheppf, Entomologist

STATE OF LOUISIANA

State Art, Historical and Cultural Preservation Agency

OLD STATE CAPITOL, BATON ROUGE, LOUISIANA 70801
(504) 389-5086

EDWIN EDWARDS
GOVERNOR

JAY R BROUSSARD
DIRECTOR

January 7, 1976

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
P. O. Box 1630
Alexandria, Louisiana 71301

RE: Choctaw Bayou Watershed Draft Environmental Impact Statement

Dear Mr. Mangum:

I have reviewed the Draft Environmental Impact Statement (DES) for the above referenced project and I have determined that the DES appears adequate in its treatment of cultural resources.

This agency has no further comment at this time.

Thank you for the opportunity to comment on this project.

Sincerely,

Dorothy H Gibbens

Dorothy H. Gibbens
Staff Archaeologist
Art, Historical and Cultural
Preservation Agency, H&CP Section

DHG/bc

State of Louisiana

WILD LIFE AND FISHERIES COMMISSION
400 ROYAL STREET
NEW ORLEANS 70130

J. BURTON ANGELLE
DIRECTOR

EDWIN EDWARDS
GOVERNOR

January 30, 1976

Mr. Alton Mangum
State Conservationist
United States Department of Agriculture
Soil Conservation Service
Post Office Box 1630
Alexandria, Louisiana 71301

Re: Review of Choctaw Bayou Watershed
Draft Plan and Draft Environmental
Impact Statement

Dear Mr. Mangum:

Our technical staff has reviewed the Choctaw Bayou Watershed Draft Plan and Draft Environmental Impact Statement.

Generally our comments on this document are the same as those listed in previous correspondence on this project and can be briefly summarized as follows:

1. Alterations to Bayou Tommy can be expected to bring about some degradation of the natural environment directly by construction damages and indirectly by the possible inducement of land clearing.

2. We suggest that our comments concerning forest soils crawfish production and the American alligator status as listed on page 2 of our letter of September 17, 1975 to you concerning this project be used to clarify the specific points mentioned.

We sincerely hope that these comments will be useful and appreciate the opportunity to comment on this project.

Sincerely yours,

J. Burton Angelle

J. Burton Angelle
Director

JBA:DD:sd

FEB 1976

Honorable Robert W. Long
Assistant Secretary of Agriculture
Washington, D. C. 20250

Dear Mr. Long:

In compliance with the provisions of Section 5 of Public Law 566, 83d Congress, the State Conservationist, by letter dated 5 December 1975, requested the views of the Secretary of the Army on the Watershed Work Plan and Draft Environmental Impact Statement for Choctaw Bayou Watershed Project, Louisiana.

We have reviewed the work plan and foresee no conflict with any projects or current proposals of this Department.

The draft environmental impact statement is considered generally satisfactory.

The Upper Delta Soil and Water Conservation District should be informed that regulatory permits will be required for work that affects navigable waters and requests for such permits should be made to the New Orleans District office of the Corps of Engineers at the earliest possible date.

Sincerely,

Signed

Charles R. Ford
Deputy Assistant Secretary of the Army
(Civil Works)

cc:
A. Mangum, SCS, Alexandria, Louisiana

EXAMPLE

APPENDIX D

OPERATION AND MAINTENANCE AGREEMENT

FOR

STRUCTURAL MEASURES

_____ PROJECT

THIS AGREEMENT made and entered into the _____day of _____, 19__ is between the Soil Conservation Service, United States Department of Agriculture, hereinafter referred to as the "Service," and the following organization(s), hereinafter referred to as the Sponsor(s):

Show name(s) of Sponsoring Local Organization(s) responsible for operation and maintenance

The measures covered by this Operation and Maintenance Agreement are identified as:

Individually name and identify the works of improvement listed in the Work Plan.

As an example:

All multiple-purpose channels listed in the Watershed Work Plan.

A. OPERATIONS

1. The Sponsor will be responsible for and will operate or have operated without cost to the Service the structural measures in compliance with any applicable Federal, State, and local laws, and in a manner that will assure that the structural measures will serve the purpose for which installed as set forth in the Work Plan.

2. The Service will, upon request of the Sponsor and to the extent that its resources permit, provide consultative assistance in the operation of the structural measures.

B. MAINTENANCE

1. The Sponsor will:

   a. Be responsible for and promptly perform or have performed without cost to the Service except as provided in Paragraph C, Establishment Period, all maintenance of the structural measures determined by either the Sponsor or the Service to be needed.

   b. Obtain prior Service approval of all plans, designs, and specifications for maintenance work involving major repair.

2. The Service will, upon request of the Sponsor and to the extent that its resources will permit, provide consultative assistance in the preparation of plans, designs, and specifications for needed repair of the structural measures.

C. ESTABLISHMENT PERIOD

1. During the Establishment Period, as herein defined, the Service will bear such part of the cost of any needed major repairs to the structural measures, including associated vegetative work, as is proportionate to the original construction costs borne by the Service in the construction of the structural measures except that the Service will not bear any of the cost for:

   a. Repairs to channels or portions thereof which do not have permanent linings such as concrete, riprap, or grouted rock.

   b. Repairs determined by the Service to have been occasioned by improper operation or maintenance, or both.

   c. Repairs that are mutually determined by the Sponsor and the Service as being items of normal maintenance rather than major repair and are not therefore in keeping with the spirit and intent of the Establishment Period provisions.

2. The Establishment Period for structural measures (exclusive of any associated vegetative work) is a period of 3 years ending at midnight on the third anniversary of the date on which the structural measure is accepted.

3. The Establishment Period for vegetative work associated with a structural measure is a period from date of acceptance of the initial vegetative work to midnight of the date on which the Service writes the Sponsor advising that an adequate

vegetative cover has been obtained. However, this period shall not exceed two growing seasons or the end of the Establishment Period for the associated structural measure whichever is greater in time.

4. As used in the two preceding paragraphs, and elsewhere in this Agreement, the following words have the meanings described below:

   ACCEPTED, ACCEPTANCE: The date structural or vegetative measures are accepted from the contractor when a contract is involved, or the date structural or vegetative measures are completed to the satisfaction of the Service when force account operations are involved.

   ADEQUATE VEGETATIVE COVER: A minimum of seventy percent (70%) evenly distributed cover of the desirable species, with no active rilling that cannot be controlled by the vegetation.

5. Major repair may involve such things as (1) replacing significant backfill around structures resulting from major erosion damages, (2)revegetating where adequate cover was not obtained, (3) restoring areas with significant erosion, and (4) removing trash and debris from bridges, culverts, and fence crossings.

6. No action with respect to needed repairs during the Establishment Period will be taken by the Sponsor or the Service which would lessen or adversely affect any legal liability of any contractor or his surety for payment of the cost of the repairs.

D. INSPECTIONS AND REPORTS

1. During the Establishment Period the Sponsor and the Service will jointly inspect the structural measures at least annually and after unusually severe floods or the occurrence of any other unusual condition that might adversely affect the structural measures. It is desirable the annual inspections be performed during the month shown below. Any supplemental inspections then determined necessary will be scheduled and agreed to at that time.

   _____
   (Month)

2. After the Establishment Period, the structural measures will be inspected annually by the Sponsor, preferably during the month shown below, and after unusually severe floods or the occurrence of any other unusual condition that might adversely affect the structural measures.

   _____
   (Month)

3. After the Establishment Period, the Service may inspect the structural measures at any reasonable time.

4. A written report will be made of each inspection. The report of joint inspections will be prepared by the Sponsor with the assistance of the Service. A copy of each report will be provided by the party preparing the report to the other party within 10 days of the date on which the inspection was made.

E. RECORDS

The Sponsor will maintain in a centralized location a record of all inspections performed both individually and jointly by the Sponsor and the Service, and of all significant actions taken by the Sponsor with respect to operation and maintenance. The Service may inspect these records at any reasonable time.

F. GENERAL

1. The Sponsor will:

   a. Prohibit the installation of any structures or facilities that will interfere with the operation or maintenance of the structural measures.

   b. Obtain prior Service approval of the plans and specifications for any alteration or improvement to the structural measures.

   c. Obtain prior Service approval of any agreement to be entered into with other parties for the operation or maintenance of all or any part of the structural measures, and provide the Service with a copy of the agreement after it has been signed by the Sponsor and the other party.

2. Service personnel will be provided the right of free access to the structural measures at any reasonable time for the purpose of carrying out the terms of this agreement.

3. The responsibilities of the Sponsor under this agreement are effective simultaneously with the acceptance of the works of improvement in whole or in part.

G. SPECIAL PROVISIONS

An Operation and Maintenance (O&M) Plan will be prepared for each structure or channel (or similar groups of structures of channels) listed on page one of this agreement at the time of advertisement for bids for such structures or channels. Such O&M Plans will be made a part of this agreement.

H. AUTHORIZATION

Name of Sponsor _____

By _____ Title _____

This action was authorized at an official meeting of the Sponsor named immediately above on _____ at _____

Attest _____ Title _____

Name of Sponsor _____

By _____ Title _____

This action was authorized at an official meeting of the Sponsor named immediately above on _____ at _____

Attest _____ Title _____

Soil Conservation Service, United States Department of Agriculture

By _____ Title _____

OPERATION AND MAINTENANCE PLAN
(CHANNELS)

These channels have been designed and constructed to provide flood protection and drainage for the surrounding lands. This will be accomplished if the channel dimensions are not reduced and the flow of water is not obstructed by trees, brush, weeds, cross fences, and heavy trash. For example, a moderately heavy growth of 2-year old willows in the channel could cut the planned capacity by 50 percent or more. The same is true for equivalent growths of cottonwoods, alders, and water-loving plants such as cattails.

Another important feature of the channel job is the service road along the banks. It is essential that this road be passable with maintenance equipment at all times.

Many of the things required to keep the channel in good working condition could be called routine maintenance, which is really nothing more than "normal good care." This includes:

1. Control of brush and weeds. Removal of willows, cottonwoods, alders, the larger woody-stemmed weeds and water plants is a yearly job. They may need attention twice a year in those years when conditions are unusually favorable for rapid growth. The job of control more than doubles with the age of the plants. As an example, killing 2-year old willows can be about four times as difficult and costly as killing them in the early seedling stage. In addition, the 2-year old and older willows tend to block the channel even after they are killed.

   Spraying, chopping, or mowing are effective ways of getting rid of brush and weeds. The best time to spray is about the time the brush becomes full-leaved. The kinds of brush that are likely to give the most trouble are blackwillow, buttonbush, cottonwood, and sycamore.

   CAUTION: If herbicides are handled or applied improperly or if unused portions are not disposed of safely, they may be injurious to humans, domestic animals, desirable plants, fish, or wildlife, and they may contaminate water supplies. Drift from aerial spraying can contaminate nearby crops and other vegetation. Follow the directions and heed all precautions on the container label.

2. Keep fences and water gaps in good condition. Look them over after each bank-full flow, replace missing staples and posts, replace broken wire.

3. Maintain side inlet structures and bridges. Replace soil that washes from around the metal pipes under the service road.

4. Remove sediment deposits as soon as possible after they form. If allowed to remain, they reduce the size of the channel, they provide good sites for willows and other brush to get a foothold, and they may divert the flow and cause erosion of the channel banks.

APPENDIX E

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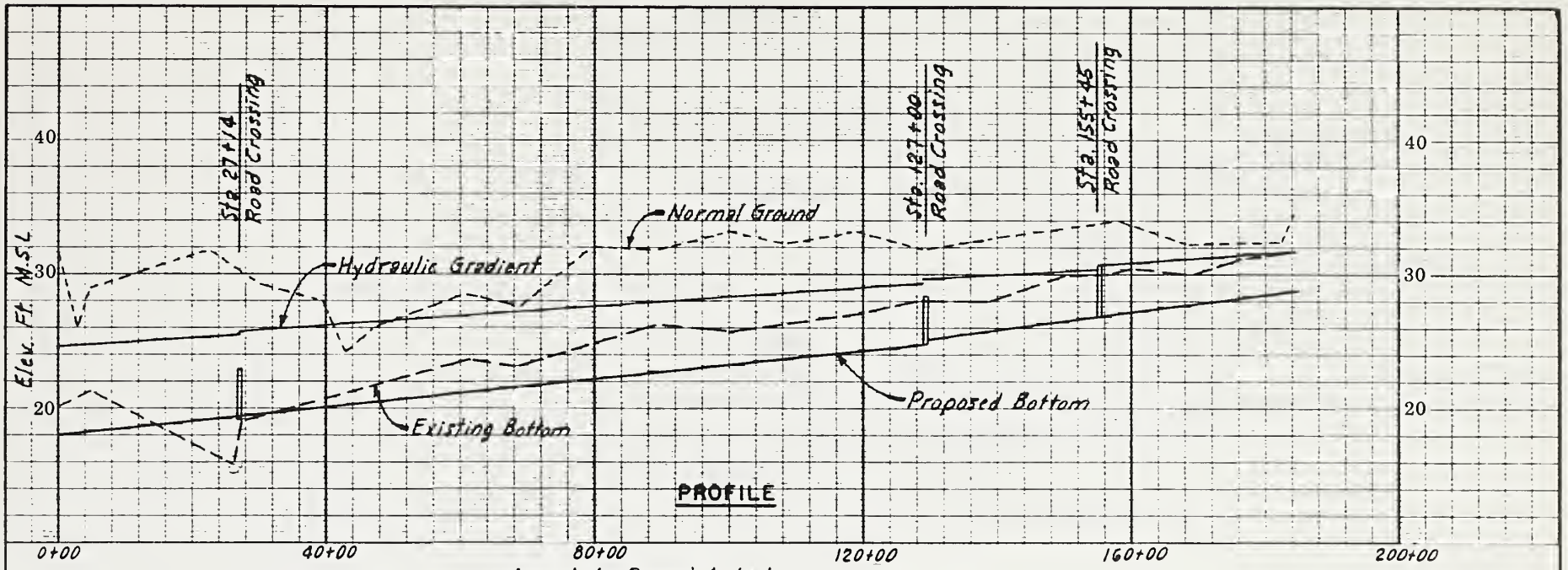
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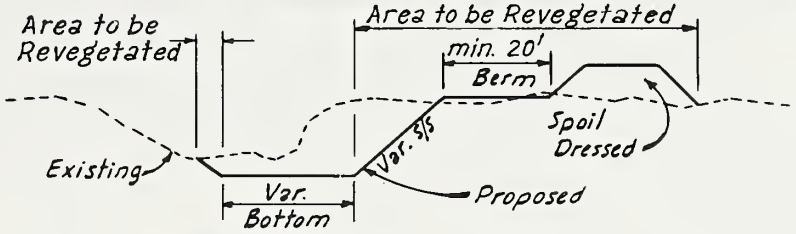
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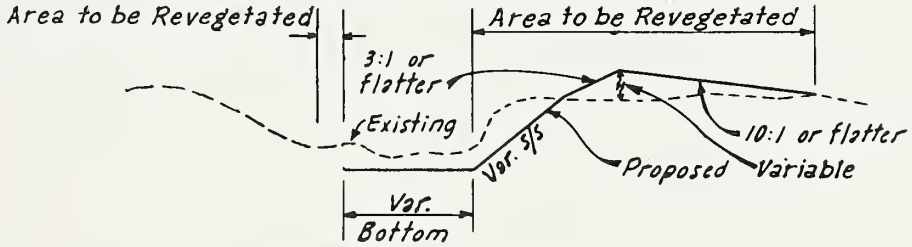
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APPENDIX F - FIGURES





SPOIL STACKED



SPOIL SPREAD

FIGURE 1

AREA TO BE REVEGETATED
CHANNEL PROFILE AND CROSS SECTIONS

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35061

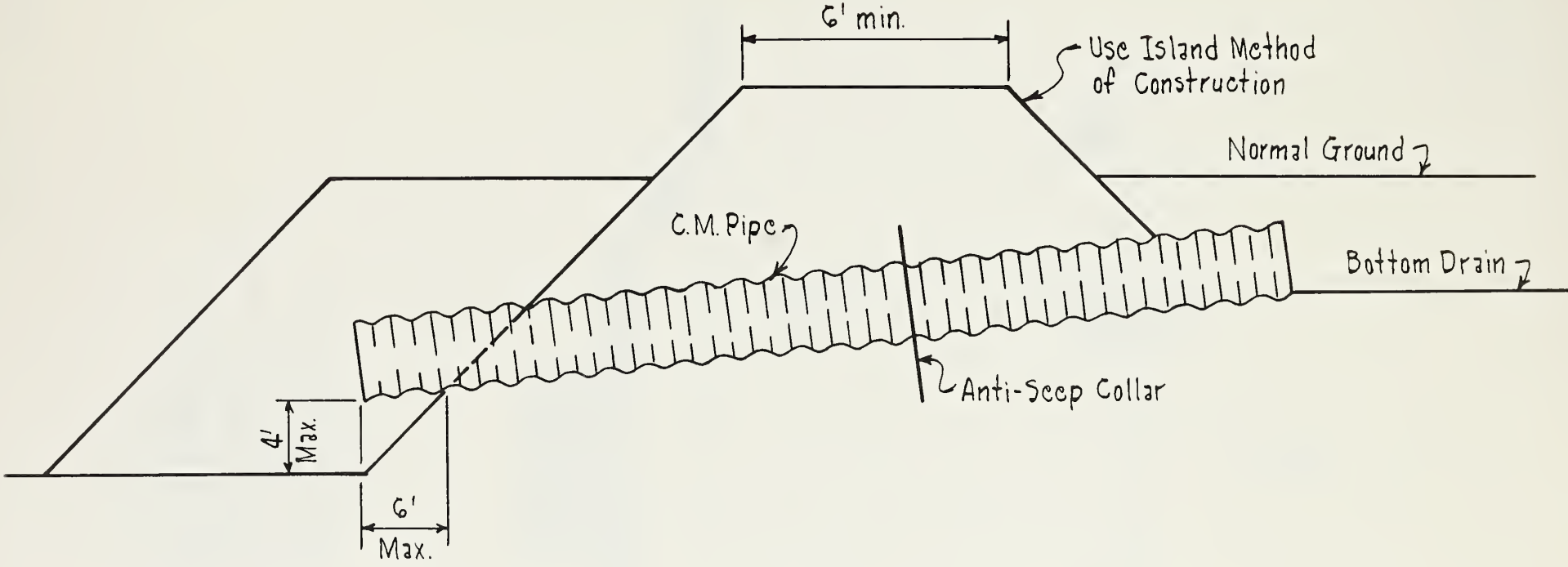


FIGURE 2

TYPICAL STRUCTURE FOR WATER CONTROL (PIPE DROP)

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35062

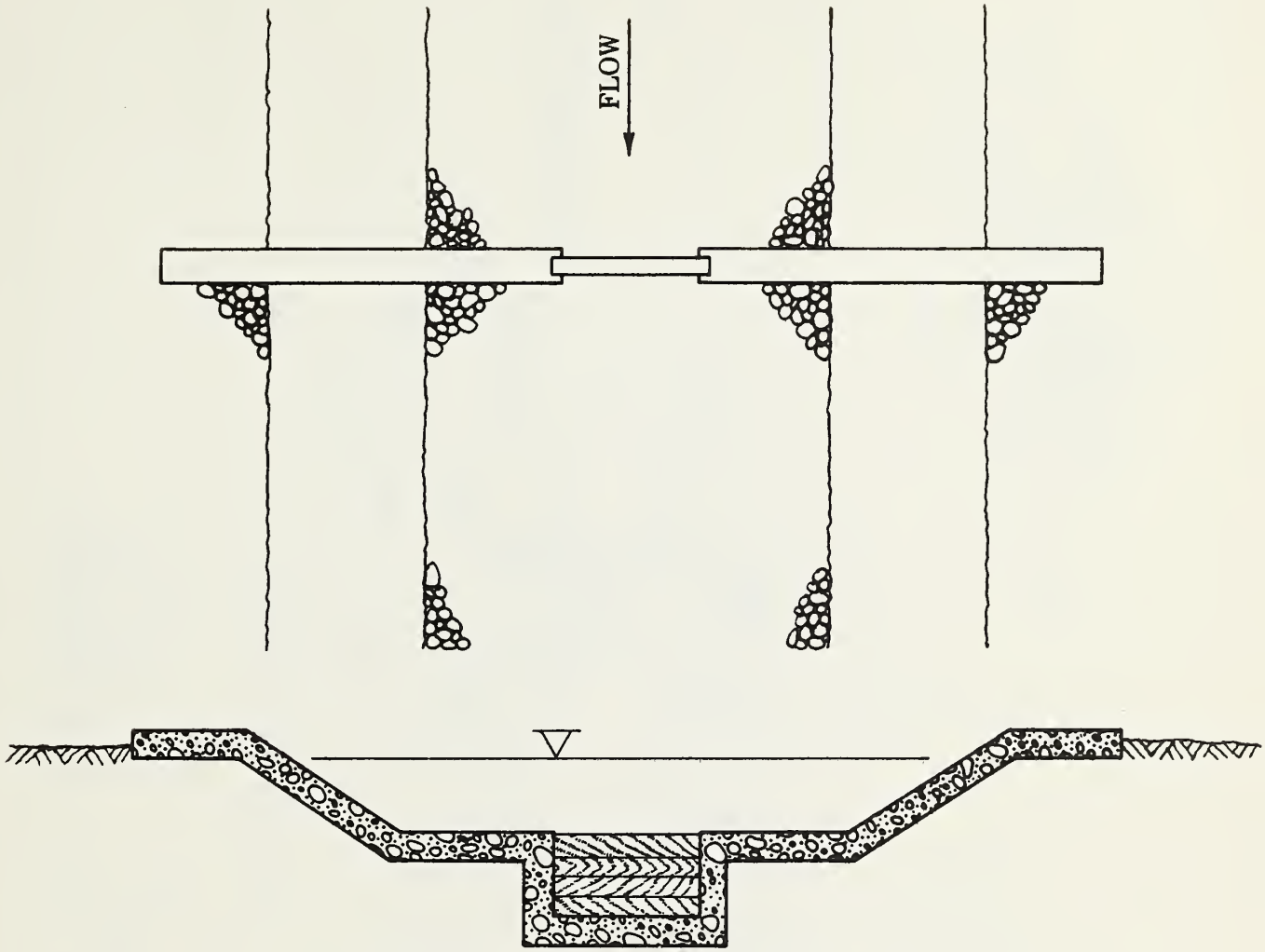


FIGURE 3

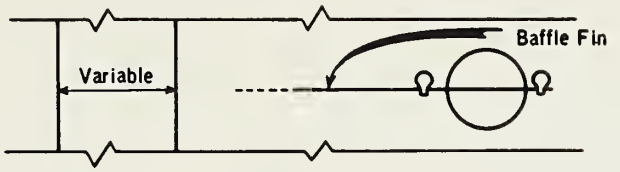
STRUCTURE FOR WATER CONTROL
(STOP LOG WEIR)

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

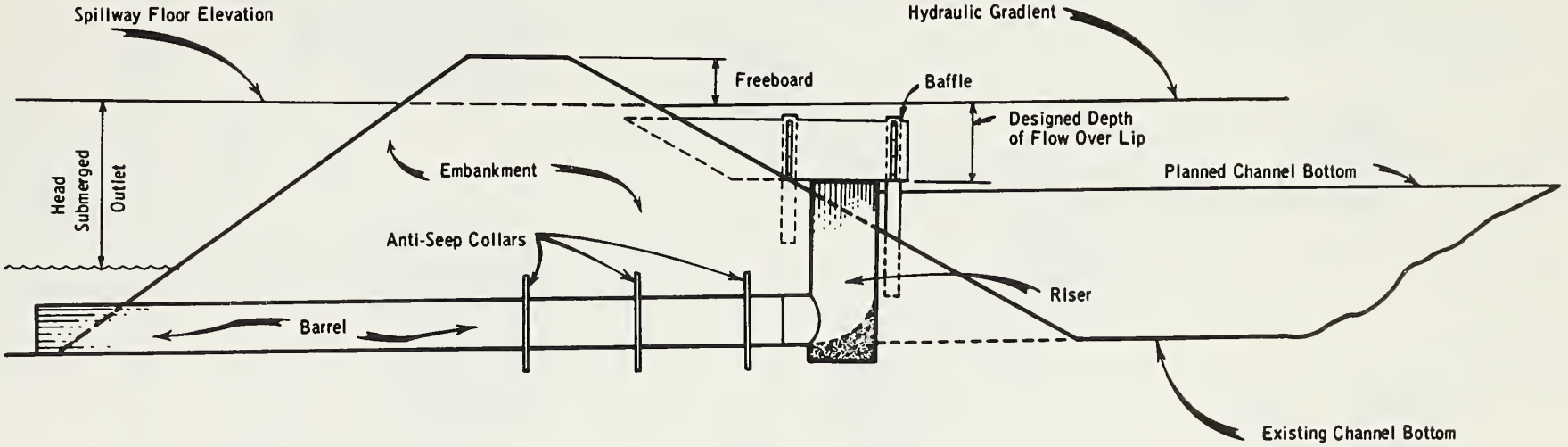
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SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

AUGUST 1975

7-75 4-35063



PLAN VIEW OF BAFFLE AND RISER



SECTION VIEW

FIGURE 4

TYPICAL GRADE STABILIZATION STRUCTURE

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35064

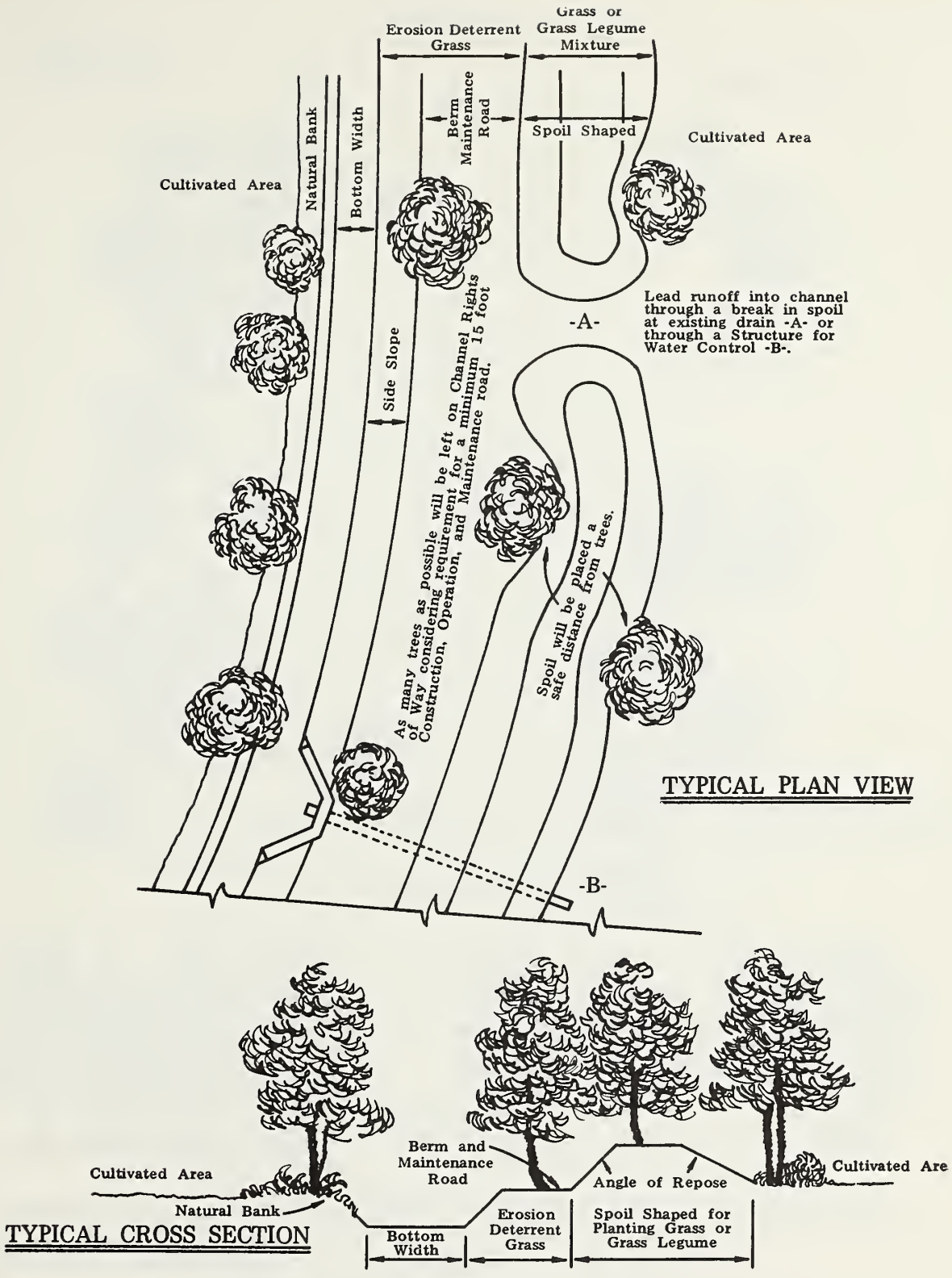


FIGURE 5

TYPICAL PLAN VIEW AND CROSS SECTION OF CHANNELS
WHERE WOODY VEGETATION EXISTS ADJACENT TO
CULTIVATED AREA

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35065
USDA-SCS-FORT WORTH, TEX. 1975

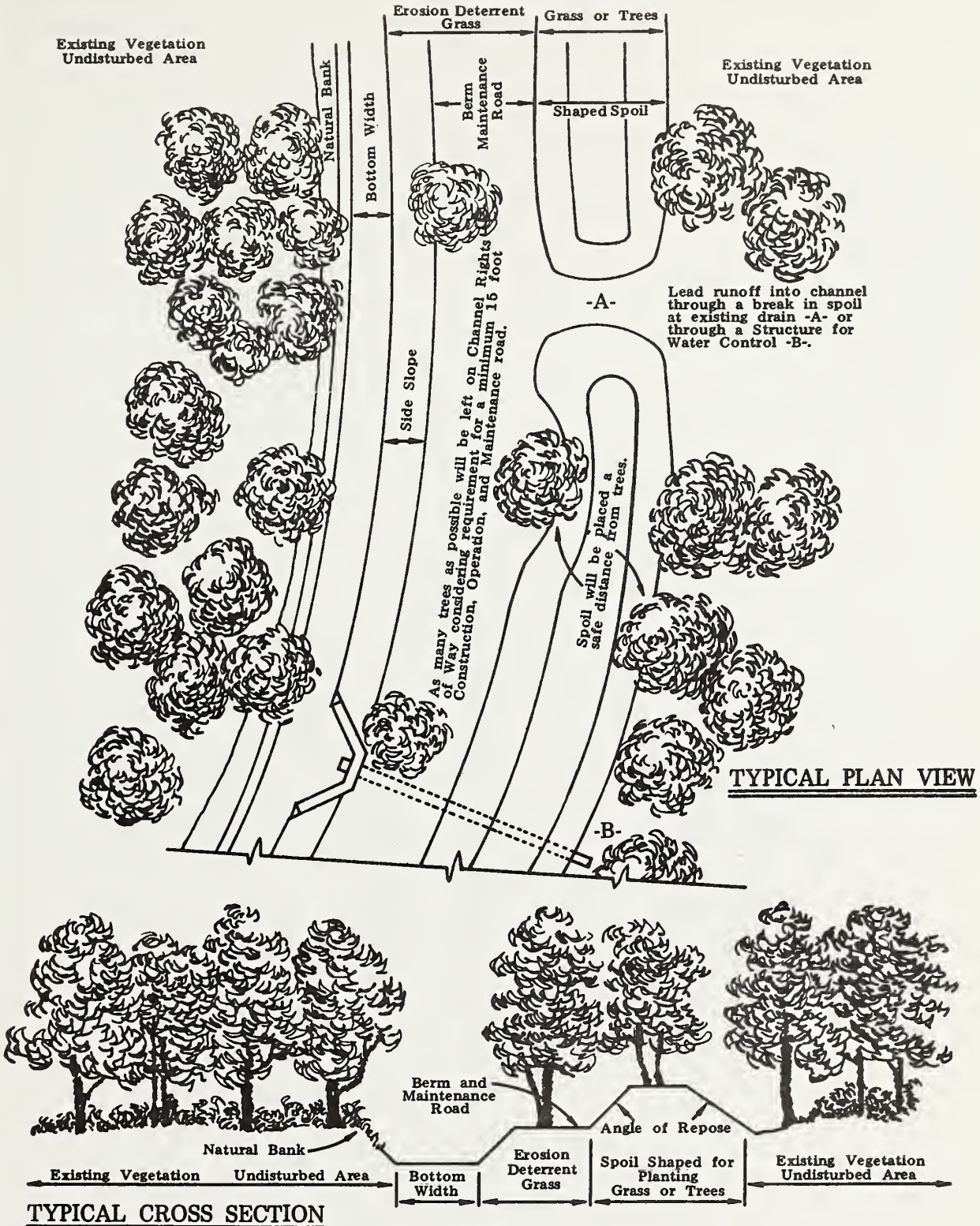


FIGURE 6

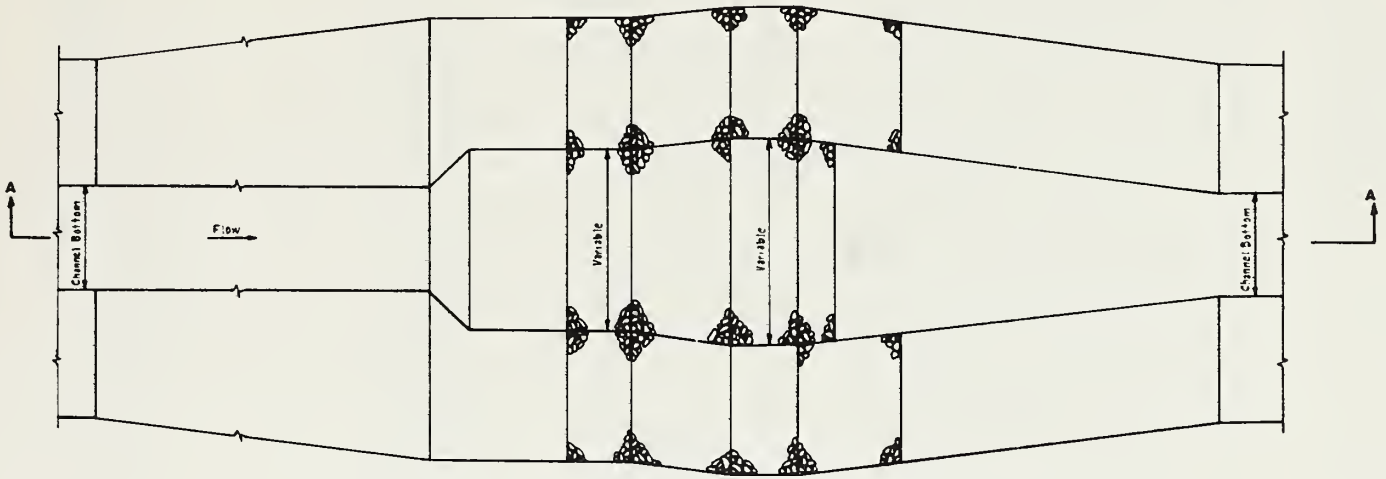
TYPICAL PLAN VIEW AND CROSS SECTION OF
CHANNELS THROUGH FOREST LAND

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35066
USDA-SCS-FORT WORTH, TEX. 1975





SECTION A—A

FIGURE 7

STRUCTURE FOR WATER CONTROL (WEIR)

CHOCTAW BAYOU WATERSHED
WEST BATON ROUGE, POINTE COUPEE AND IBERVILLE
PARISHES, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

August 1975

7-75 4-35067

APPENDIX G

INTERPRETATIONS OF WATER QUALITY PARAMETERS

CHLORIDE (Cl)

Water quality is dependent upon the use(s) of the water. The following data is not all inclusive but summarizes water quality criteria for some common uses.

Chloride is found in natural waters. It may originate from natural mineral origin or from (1) seawater contamination of underground water supplies, (2) salts spread on roads and bridges, (3) human or animal sewage, and (4) industrial effluents such as those from paper works, water softening plants, oil wells, and petroleum refineries. It is recommended that the chloride concentration not exceed a monthly average of 125 mg/l and that the maximum concentration not exceed 250 mg/l. The primary concern in setting these standards is economic damage rather than public health. For public supplies, water with a chloride concentration of less than 125 mg/l is rated "acceptable"; between 125 and 250 mg/l "doubtful"; and over 250 mg/l "unsatisfactory." For industrial use, the corresponding limits are: less than 50 mg/l, 50-175 mg/l, and over 175 mg/l, respectively.

"The Aquatic Life Advisory Commission of the Ohio River Valley Water Sanitation Commission concluded that it is impossible to generalize on the effects of chloride concentrations on aquatic life, because each mixture of chlorides with other salts must be evaluated separately. Hart, et al., cite data indicating that among U.S. waters supporting a good fish fauna, ordinarily the concentration of chlorides is below 3 mg/l in 5 percent; below 9 mg/l in 50 percent; and below 170 mg/l in 95 percent of such waters."1/

In summary, it appears that the following chloride concentrations will not normally be deleterious to the specified use: (1) Domestic water supply, 125 mg/l; (2) Industrial water supply, 50 mg/l; (3) Irrigation water, 100 mg/l; and (4) Stock and wildlife, 1,500 mg/l.

1/ Jack Edward McKee and Harold W. Wolf, Water Quality Criteria, publication No. 3-A, (2nd edition; Sacramento: State Water Quality Board, 1963), p. 161.

COLOR (APPARENT)

Color of natural waters is derived from substances in solution or from materials in colloidal state.2/ The standard unit used to measure color is the amount of color produced by adding 1 mg/l of platinum to water. Results are expressed as units of color. "Color in excess of 50 units may limit photosynthesis and have a deleterious effect upon aquatic life, particularly phytoplankton and the benthos."3/

DISSOLVED SOLIDS

Water without some dissolved solids does not occur in nature and will not support aquatic life. Natural water contains a variety of dissolved materials in concentrations that will vary widely from place to place and from time to time. Some commonly occurring dissolved solids are: carbonates; bicarbonates; chlorides; sulfates; phosphates; nitrates of calcium, magnesium, sodium, and potassium; and traces of iron, manganese, and other elements. Many of these dissolved solids are essential to aquatic organisms for their growth, reproduction, and general well-being. All dissolved solids, which are necessary to aquatic organisms, have a range of concentrations that are both essential and tolerable. The tolerance level for any one dissolved solid varies depending on the concentrations and kinds of other substances present. In general, the concentrations of dissolved materials in natural freshwaters are below the optimum for maximum productivity. In many instances, the addition of any of a large number of substances would be beneficial. However, the addition of what may be considered a beneficial substance must be planned and controlled so that it will not exceed favorable limits.4/ It is believed that the total dissolved solids in a water course should not be increased more than one-third of the concentration it has under natural conditions.

Dissolved solids may influence the toxicity of heavy metals and organic compounds to fish and other forms of aquatic life. This is a result primarily of the counteracting effect of hardness

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2/ George K. Reid, Ecology of Inland Waters and Estuaries, (New York: Reinhold Publishing Corporation, 1961), p. 101.

3/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1972), p. 48.

4/ Ibid., p. 39.

producting metals. "It has been reported that among inland waters in the United States supporting a good mixed fish fauna, about 5 percent have a dissolved solids concentration under 72 mg/l, about 50 percent under 169 mg/l, and about 95 percent under 400 mg/l."5/

In summary, based on a literature review, dissolved solids up to the following limits should not interfere with the indicated use: (1) Domestic water supply, 1,000 mg/l; (2) Irrigation water, 700 mg/l; (3) Stock and wildlife water, 2,500 mg/l; and (4) Freshwater fish and aquatic life, 2,000 mg/l.

HARDNESS

Hardness or calcium carbonate determinations are made with the Titration Method and expressed as mg/l. "In natural waters, hardness is a characteristic of water which represents the total concentration of just the calcium and magnesium ions expressed as calcium carbonate."6/ Hardness in water may be caused by the natural accumulation of salts from contact with soil and geological formations, or it may enter from direct pollution by industrial wastes. Water with less than 40 mg/l is considered soft water, 90-150 mg/l is medium, and above 150 mg/l is considered hard water. Hardness of waters is not considered a problem for fisheries in Louisiana.

NITROGEN, AMMONIA (NH_3)

Nitrogen is present in natural waters in compounds such as ammonia. Nitrogen, (ammonia) determinations are made by the Nessler method and expressed in mg/l. The chemical state of nitrogen is dependent on the overall limnological conditions of the waterway since nitrogen, (ammonia) is quite unstable. In most freshwaters, the concentrations of this inorganic compound are relatively slight; but nevertheless, very important in determining the productivity of a given community. "Rivers known to be unpolluted have low ammonia concentrations, generally less than 0.2 mg/l as N."7/

5/ McKee and Wolf, op. cit., p. 183.

6/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Chemical Analysis for Water Quality, 1967, p. 18-1.

7/ McKee and Wolf, op. cit., p. 132.

NITROGEN, NITRATE (NO_3)

Nitrogen, (nitrate) determinations are made by the Cadmium Reduction Method and expressed in mg/l. "Nitrogen, (nitrate) usually occurs in relatively small concentrations in unpolluted freshwater, the world average being 0.30 ppm."8/ Under normal conditions, the amount of nitrate in solution at a given time is determined by metabolic processes in the body of water, i.e., production and decomposition of organic matter. High nitrate concentrations in effluents and water stimulate the growth of plankton and aquatic weeds. By increasing plankton growth and the development of fish food organisms, nitrates indirectly foster increased fish production.

"Hart, et al., report references to the effect that among United States' waters supporting a good fish life, ordinarily 5 percent have less than 0.2 mg/l of nitrates; 50 percent have less than 0.9 mg/l; and 95 percent have less than 4.2 mg/l."9/

OXYGEN (DISSOLVED) (O_2)

The dissolved oxygen content can be determined with a Hach Dissolved Oxygen test kit and expressed in mg/l. The content of dissolved oxygen in the water depends on several factors such as the temperature and salinity of the water, amount of organic material present, light present, and the abundance of phytoplankton. "For a diversified warm-water biota, including game fish, dissolved oxygen concentrations should be above 5 mg/l, assuming normal seasonal and daily variations are above this concentration. Under extreme conditions, however, they may range between 5 and 4 mg/l for short periods during any 24-hour period, provided that the water quality is favorable in all other respects."10/

OXYGEN SATURATION (Percent)

Water is said to be saturated with oxygen when it contains all the dissolved oxygen it can hold at a given atmospheric pressure, temperature, and dissolved solids concentration. The difference between the actual oxygen content and the amount that could be

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8/ Reid, op. cit., p. 187.

9/ McKee and Wolf, op. cit., p. 225.

10/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, op. cit., p. 44.

present is called the saturation deficit. If the water contains more oxygen than should normally be present, it is said to be supersaturated. The ability of water to hold oxygen decreases with increases in temperature, dissolved solids, and reduction of atmospheric pressure. 11/ Natural waters are seldom at equilibrium or exactly saturated with dissolved oxygen. The reason for this is that temperatures and atmospheric pressure are always changing; and physical, chemical, bio-chemical, and biological activities are continually utilizing or producing dissolved oxygen.

Oxygen saturation, like pH and alkalinity, is only a measurement, but it indicates the amount of potential oxygen actually present. High or low oxygen saturation values usually indicate high or low concentrations of dissolved oxygen, but this is not always the case. For instance, seawater at 15 degrees centigrade and 100 percent saturation will contain only 6 ppm dissolved oxygen, and freshwater at 15 degrees centigrade and 100 percent saturation will contain 11 ppm dissolved oxygen.12/

In natural waters, oxygen saturation is usually between 70 and 120. Readings below this range usually indicate pollution which is utilizing the available oxygen inhibiting the biological production of additional oxygen. Readings above this range usually come in mid to late afternoon on warm, sunny days, and indicate excessive photosynthetic activity by green plants in the water.

pH

The pH can be determined with a Hach test kit. The symbol "pH" is used to designate the logarithm (base 10) of the reciprocal of the hydrogen-ion concentration. If the pH value is less than 7, then the solution is considered acid and the lower the number the more acid the solution. Values above 7 indicate a basic solution and the larger the number the more basic the solution. "In most productive, fresh, natural water, the pH falls between 6.5 and 8.5 (except when increased by photosynthesis activity).13/ "Bass

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11/ Charles W. Keenan and Jesse H. Wood, General College Chemistry (2nd ed.; New York, Evanston, London: Harper and Row, Publishers, 1957).

12/ Reid, op. cit. 101.

13/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, op cit., p. 40.

and bluegill can live from 4.6 to 11; growth and reproduction at either extreme is poor. The optimum level for growth for these fish is 6.5 to 8.5."14/

PHOSPHATE, ORTHO (PO_4)

The Orthophosphate determinations were made by the Ascorbic Acid Method which gives a reading in mg/l. This is a test for just orthophosphates and does not indicate total phosphate content. The major sources of phosphorus entering freshwaters are domestic sewage effluents (including detergents), animal and plant processing wastes, fertilizer and chemical manufacturing spillage, various industrial effluents, and to a limited extent, sediment materials in agricultural runoff. "Phosphorus is stored in plankton and bottom sediments. Very little of this stored phosphorus reenters the water. Evidence from the addition of fertilizers to fish ponds and from what is known about the eutrophication of lakes by sewage supports the view that phosphorus plays a major role in production."15/ "Most natural waters contain relatively low levels of phosphorus (0.01 to 0.05 mg/l) in the soluble state during periods of significant productivity."16/ "Optimum growth of all organisms studied in cultures can be obtained on concentrations from 0.09 to 1.8 mg/l of phosphorus while a limiting effect on all organisms will occur in phosphorus concentrations from 0.009 mg/l downward. The lower limit of optimum range of phosphorus concentration varies from about 0.018 to about 0.09 mg/l; and the upper limit from 8.9 to 17.8 mg/l."17/

SODIUM (Na)

Sodium is a very active metal which does not occur free in nature. Nevertheless, sodium compounds make up 2.8 percent of

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14/ U.S. Department of Agriculture, Soil Conservation Service, "Water Quality and Fish Culture," Biology Technical Note XII, 1968.

15/ U.S. Department of the Interior, Federal Water Pollution Control Administration, The Practice of Water Pollution Biology, Division of Technical Support, 1969, p. 40.

16/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Chemical Analysis for Water Quality, op cit., p. 15-1.

17/ S. P. Chu, "The Influence of the Mineral Composition of the Medium on the Growth of Planktonic Algae," Journal of Ecology, 31(2), 1943, pp. 109-148.

the earth's crust. Most sodium salts are extremely soluble in water. Because of this, any sodium that is leached from soil or discharged into streams by industries will normally remain in solution. Sodium is the cation of many salts used in industry and is one of the most common ions in process wastes.

Sodium in drinking water may be harmful to people suffering from cardiac, renal, and circulatory diseases. Drinking water of good quality may contain up to 115 mg/l of sodium, but it is recommended that a limit of 10 mg/l be established for drinking water and 50 mg/l for industrial water. Water used by livestock and wildlife should not have sodium concentrations greater than 2,000 mg/l.

"Of the United States' waters supporting a good fish fauna, originally the concentration of sodium plus potassium is less than 6 mg/l in about 5 percent, less than 10 mg/l in about 50 percent, and less than 85 mg/l in about 95 percent."18/

SPECIFIC CONDUCTANCE

Specific conductance is an indication of the ion concentration in water. Natural freshwater usually contains relatively small amounts of ions in solution, but in water polluted by brines and various chemical wastes the ion concentration may rise to levels that are harmful to living organisms because of the increase in osmotic pressure.

All substances in a solution collectively exert osmotic pressure on the organisms living in the solution. Most aquatic species can tolerate some changes in the amount of ions naturally present if the total maximum concentration is not exceeded. Wide variations in total salinity (specific conductance) or in the concentration of individual salts can have profound effects upon the aquatic fauna, resulting in the elimination of some or all aquatic species. When the osmotic pressure is sufficiently high because of ions in solution (high specific conductance), water will be drawn from the gills and other delicate external tissues causing considerable damage or even death. High concentrations of many types of pollutants of freshwater present this danger apart from any other toxic or corrosive effects they may have.19/

"Ellis has concluded that conductances in excess of $1,000 \times 10^{-6}$ mhos at 25 degrees centigrade in most types of streams are probably

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18/ McKee and Wolf, op. cit., p. 259.

19/ Ibid., p. 94.

indicative of the presence of acid or salt pollution of various kinds. Ellis has also found that a specific conductance of 4,000 4,000 x 10^{-6} mhos at 25 degrees centigrade is approximately the upper limit of ionizable salts tolerated by fish.

Using Ellis' data, Hart, et al., have reported that among United States' water supporting a good fish fauna, about 5 percent have a specific conductance under 50 x 10^{-6} mhos at 25 degrees centigrade, about 50 percent under 270 x 10^{-6} mhos, and about 95 percent under 1,100 x 10^{-6} mhos."20/

SULFATE (SO_4)

Sulfate content can be analyzed by the Turbidimetric Method and expressed in mg/l. Sulfates occur naturally in waters as a result of leachings from gypsum and other common minerals. "Sulfate is ecologically important in natural waters in several ways. It is apparently necessary for plant growth; short supply of the material can inhibit the development of phytoplankton populations and, therefore, production. Sulfur is important in protein metabolism and is supplied to the organism originally as sulfate."21/ "In United States waters that support good game fish populations, 5 percent of the waters contain less than 11 mg/l of sulfates, 50 percent less than 32 mg/l, and 95 percent less than 90 mg/l. Experiments indicate that water containing less than 0.5 mg/l of sulfate will not support growth of algae."22/

SULFIDE (S)

Sulfides are determined by the Methylene Blue Method and expressed in mg/l. Sulfides in water are a result of the natural processes of decomposition, sewage, and industrial wastes such as those from oil refineries, tanneries, pulpmills, papermills, textile mills, chemical plants, and gas manufacturing facilities.

"The toxicity of solutions of sulfides toward fish increase as the pH value is lowered, i.e., the H_2S or HS, rather than the sulfide ion, appears to be the toxicity principle."23/ "Concentrations

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20/ Ibid., p. 274.

21/ George K. Reid, op. cit., p. 195.

22/ McKee and Wolf, op. cit., p. 276.

23/ Ibid., p. 277.

in the range of less than 1.0 mg/1 to 25.0 mg/1 are lethal in 1 to 3 days to freshwater fish."24/

SUSPENDED SOLIDS

In natural waters, suspended solids consist normally of sediment, organic detritus, bacteria, and plankton. The standard method of determining the suspended solids content of a water source is the Phytometric Method, which gives a direct reading of mg/1 of suspended solids. The test does not measure the concentrations of specific chemical substances in water, but rather gives an empirical estimate of water quality by measuring the amount of suspended foreign materials. Prolonged exposure to concentratios of 100-200 mg/1 may kill some species of fish and shellfish.25/

TEMPERATURE

Temperature is an important, and sometimes critical water quality parameter. Water temperature changes can result from natural climatic phenomena or from man's activities. For instance, "stream temperatures may be increased by irrigation practices and the return of agricultural drainage."26/

Water temperature changes resulting from man's activities are usually upward. Changes in temperature cause some or all of the following: (1) increases the solubility of dissolved oxygen, thereby reducing the availability of this essential gas, (2) higher temperatures increase the rate of metabolism and respiration and thus the oxygen demand of fish and other aquatic life; therefore, the oxygen demand is increased while the oxygen supply is decreased, (3) intensifies the toxicity of many substances, (4) increases favor the growth of sewage fungus and the putrefaction of sludge deposits which is detrimental to desirable fishes, (5) because changes in temperature may cause a change in species composition, there is a maximum and minimum temperature that each species can tolerate. (fish tolerance to temperature extremes and changes vary with fish species, prior acclimatization, oxygen availability, and the synergistic effects of other pollutants) and (6) changes in

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24/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, op cit., p. 88.

25/ McKee and Wolf, op. cit., p. 280.

26/ Ibid., p. 283.

temperature affect lower aquatic life. Temperature is one of the environmental features that determines which organisms will thrive, diminish, or be eliminated.27/

To maintain a well-rounded warm-water fishery population, the following recommendations were made on temperature extremes and temperature increases.

1. "During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water (at the expected minimum daily flow for that month) more than 5 degrees Fahrenheit. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3 degrees Fahrenheit above that which existed before the addition of heat of artificial origin. The increase should be based on the monthly average of the maximum daily temperature.

2. The normal daily and seasonal temperature variations that were present before the addition of heat, because of other than natural causes, should be maintained.

3. The recommended maximum allowable temperatures are not to exceed the maximum temperatures of the preferred fish species and their associated biota."28/

TOTAL ALKALINITY

Alkalinity is not a specific polluting substance, but rather a combined effect of several substances and conditions. It is actually a measurement of the power of a solution to neutralize hydrogen ions. It is usually expressed in terms of an equivalent amount of calcium carbonate, $CaCO_3$. Alkalinity is caused by the presence of carbonates, bicarbonates, hydroxides, and to a lesser extent by borates, silicates-phosphates, and organic substances. Total alkalinity is related to pH but high pH values do not necessarily mean high total alkalinity values. High total alkalinity values indicate a buffered water which would be resistant to rapid, wide changes in pH. For instance, water with a pH of 7.0 can have a low total alkalinity value, whereas a buffered water with a pH of 6.0 can have a higher total alkalinity value.

Alkalinity itself is not considered harmful to humans but it is usually associated with high pH, hardness, and excessive

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27/ Ibid., p. 285.

28/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, op cit., p. 42.

dissolved solids, all of which may be harmful. For industrial use, high total alkalinity can be either beneficial or detrimental depending upon the type of industry.

Water to be used by livestock and wildlife for drinking should have a total alkalinity below 170 mg/l. Animals drinking water with higher values develop diarrhea. For fish and other aquatic life, alkalinity is not lethal to fully developed fish if the concentration is not enough to raise the pH well above 9.0.

The best waters for supporting a productive, diversified fish population and other aquatic life are those with pH values between 7 and 8 and having a total alkalinity of 120 mg/l or more. This alkalinity acts as a buffer to help prevent sudden changes in pH which could be harmful to fish and other aquatic life.29/

For waterfowl, waters with relatively high bicarbonate alkalinity produce more high value food plants than those with low such values. "Few waters with less than 25 mg/l bicarbonate alkalinity can be classed among the better waterfowl habitat."30/ Bicarbonate increases the amount of CO_2 available for plant use in photosynthesis.

TURBIDITY

Turbidity is the term used to describe the degree of translucence produced in water by suspended particulate matter. Excessive turbidity reduces light penetration into the water and, therefore, reduces photosynthesis by phytoplankton organisms, attached algae, and submersed vegetation. Turbidity calibrations were originally based on the Jackson Candle Turbidimeter with results expressed in Jackson Turbidity Units (JTU). As the Jackson equipment lacks sensitivity below 25 JTU (most treated water ranges from 0 to 5 JTU), the meter scale calibrations have been based on a uniform milky polymer called formazin, which allows accurate calibrations over a wide range. The results are expressed as Formazin Turbidity Units (FTU) and are equivalent to the Jackson Units. According to Buck, "maximum production of 161.5 lbs/acre occurred in farm ponds where the average turbidity was less than 25 FTU. Between 25 and 100 FTU fish yield dropped 41.7 percent to 94 lbs/acre, and in muddy ponds where turbidity exceeded 100 FTU, the yield was only 29.3 lbs/acre, or 18.2 percent of clear ponds."31/

29/ McKee and Wolf, op. cit., p. 129.

30/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, op cit., p. 94.

31/ Ibid. 46.

APPENDIX H

COMMON AND SCIENTIFIC NAMES OF PLANTS

AND ANIMALS MENTIONED IN THIS

ENVIRONMENTAL IMPACT STATEMENT

The animals are listed alphabetically by the common name followed by the scientific name.

MAMMALS

Bobcat
Lynx rufus

Black bear
Ursus americanas

Cotton rat
Sigmodon hispidus

Cottontail rabbit
Sylvilagus floridansu

Coyote
Canis latrans

Florida panther
Felix concolor coryi

Fox squirrel
Sciurus niger

Gray fox
Urocyon cinereoargenteus

Gray squirrel
Sciurus carolinensis

Mink
Mustela vison

Nine-banded armadillo
Dasypus novemcinctus

Nutria
Myocastor coypus

Opossum
Didelphis virginiana

Otter
Lutra candensis

Raccoon
Procyon lotor

Red bat
Lasiurus borealis

Red fox
Vulpes vulpes

Short-tail shrew
Blarina brevicauda

Striped skunk
Mephitis mephitis

Swamp rabbit
Sylvilagus aquaticus

White-footed mouse
Peromyscus leucopus

White-tailed deer
Odocoileus virginianus

BIRDS

Anhinga (water turkey)
Anhinga anhinga leucogaster

Bachman's warbler
Vermivora bachmanii

Barred owl
Strix varia

Belted kingfisher
Megaceryle alcyon

Blue jay
Cyanocitta cristata

Blue-winged teal
Anas discors

Bobwhite quail
Colinus virginianus

Brown thrasher
Toxostoma refum

Cattle egret
Bubulcus ibis

Common crow
Corvus brachyrhynchos

Common egret
Casmerodius albus

Common snipe
Capella gallinago

Eastern meadowlark
Sturnella magna

Eastern mockingbird
Mimus polglottos

Green heron
Butorides virescens

Killdeer
Charadrius vociferus

Louisiana heron
Hydranassa tricolor

Mallard
Anas platyrhynchos

Mourning dove
Zenaidura macroura

Pileated woodpecker
Dryocopus plieatus

Red-headed woodpecker
Melaerpes erythrocephalus

Red-shouldered hawk
Buteo lineatus

Red-tailed hawk
Buteo jamaicensis

Robin
Tardus migratorius

Screech owl
Otus asio

Snowy egret
Egretta thula

Southern bald eagle
Haliacetus leucocephalus

White ibis
Guara alba

White-throated sparrow
Zonotrichia albicollis

Wild turkey
Meleagris gallopavo

Woodcock
Phiohela minor

Wood duck
Aix sponsa

Yellow-billed cuckoo
Cocyzus americanus

REPTILES

American alligator
Alligator mississipiensis

Broad-headed skink
Eumeces laticeps

Canebrake rattlesnake
Crotalus horridus atricaudatus

Common snapping turtle
Chelydra serpentina

Diamond-backed water snake
Natrix rhombifera

Eastern garter snake
Thamnophis sirtalis sirtalis

Eastern hognose snake
Heterdon playrhinos

Five-lined skink
Eumeces fasciatus

Gray rat snake
Elaphe obsoleta spiloides

Green anole
Anolis carolinensis

Red-eared turtle
Pseudemys scripta elegans

Smooth softshell turtle
Trionyx muticus

Speckled kingsnake
Lampropeltis getulus holbrooki

Southern copperhead
Agkistrodon contortrix contortrix

Southern fence lizard
Sceloporus undulatus undulatus

Western cottonmouth
Agkistrodon piscivorous leucostoma

AMPHIBIANS

Bullfrog
Rana catesbeiana

Central newt
Diemictylus viridescens louisienensis

Dwarf salamander
Manculus quadridigitatus

Eastern narrow-mouthed toad
Gastrophryne carolinensis

Fowler's toad
Bufo woodhousei fowleri

Green tree frog
Hyla cinerea

Marbled salamander
Ambystoma opacum

Smallmouthed salamander
Ambystoma texanum

Southern Cricket frog
Acris gryllus gryllus

Southern leopard frog
Rana pipiens sphenocephala

Spring peeper
Hyla crucifer

Three-toad amphiuma
Amphiuma means tridactylum

FISHES

American eel
Anguilla rostratta

Bigmouth buffalo
Ictiobus cyprinellus

Black buffalo
Ictiobus niger

Black crappie
Pomoxis nigro-maculatus

Black bullhead
Ictalurus melas

Blue catfish
Ictalusus furcatus

Bluegill
Lepomis marcochirus

Brook silverside
Labidesthes sicculus

Bowfin
Amia calva

Carp
Cyprinus carpio

Chain pickerel
Esox niger

Channel catfish
Ictalurus punctatus

Flathead catfish
Pylodictis olivaris

Flier
Centrarchus macropterus

Freshwater drum
Aplodinotus grunniens

Largemouth bass
Micropterus salmoides

Longear sunfish
Lepomis megolotis

Longnose gar
Lepisosteus osseus

Mooneye
Hiodon tergisus

Mosquitofish
Gambusia affinis

Paddlefish
Polyodon spathula

Pirate perch
Aphredoderus sayanus

Redear sunfish
Lepomis microlophus

Redfin pickerel
Esox americanus

Sailfin molly
Poccilia latipinna

Shortnose gar
Lepisosteus platostomus

Smallmouth buffalo
Ictiobus bubalus

Spotted gar
Lepisosteus oculatus

Spotted sunfish
Lepomis punctatus

Striped mullet
Mugil cephalus

FISHES - (continued)

Gizzard shad
Dorosoma cepedianum

Golden shiner
Notemigonus crysoleucas

Green sunfish
Leopmis cyanellus

Tadpole madtom
Noturus gyrinus

Threadfin shad
Dorosoma petenense

Warmouth
Lepomis gulosus

White crappie
Pomoxis annularis

Yellow bullhead
Ictalurus natalis

PLANTS

Aquatics, Grasses, and Forbs

Anabaena
Anabaena spp.

Anacystis
Anacystis sp.

Aster
Aster spp.

Bermudagrass
Cynodon dactylon

Bluestems
Andropogon spp.

Carpetgrass
Axonopus affinis

Clover
Trifolium spp.

Fall panicum
Panicum dichotomiflorum

Tall fescue
Festuca arundinacea

Foxtail
Alopecurus geniculatus

Johnsongrass
Sorghum helapense

Pondweed
Potamogeton spp.

Ragweed
Ambrosia artemisifolia

Ryegrass
Lolium multiflorum

Sedges
Carex spp.

Sesbania
Sesbania exaltata

Smartweed
Polygonum spp

Switchgrass
Panicum virgatum

Verbenia
Verbenia litoralis

Vaseygrass
Paspalum urvillei

Wolly croton
Croton capitatus

Shrubs and Vines

Alabama supplejack
Berchemia scandens

American elder
Sambucus canadensis

Blackberry
Rubus spp.

Box elder
Acer negundo

Japenese honeysuckle
Lonicera Japonica

Deciduous holly
Ilex decidua

Swampprivet
Forestiera acuminata

Buttonbush
Cephalanthus occidentalis

Greenbrier
Smilax spp.

Hawthorn
Crategus marshalli

Trumpetcreeper
Campsis radicans

Virginia creeper
Parthenocissus quinquefolia

Trees

American elm
Ulmus americana

Baldcypress
Taxodium distichum

Bitter pecan
Carya aquatica

Black willow
Salix nigra

Eastern cottonwood
Populus deltoides

Green ash
Fraxinus pennsylvanica

Hickory
Carya spp.

Overcup oak
Quercus lyrata

Pecan
Carya illinoensis

Red maple
Acer rubrum

Sugarberry
Celtis laevigata

Roughleaf dogwood
Cornus drummondii

Sweetgum
Liquidambar styraciflua

American sycamore
Plantanus occidentalis

Water tupelo
Nyssa aquatica

Water oak
Quercus nigra

Willow oak
Quercus phellos

Cultivated Crops

Corn
Zea mays

Cotton
Gossypium hirsutum

Soybeans
Glycine max

Sugarcane
Saccharum officinarum

Wheat
Triticum aestivum

APPENDIX I

WATER QUALITY CRITERIA FOR BAYOU CHOCTAW

General Criteria

The following general criteria are applicable to the surface waters of the State of Louisiana and specifically apply with respect to substances attributed to waste discharges or the activities of man as opposed to natural phenomena.

Natural waters may, on occasion, have characteristics outside the limits established by these criteria; in which case these criteria do not apply. The criteria adopted herein relate to the condition of water as affected by waste discharges or man's activities.

These general criteria do not supercede specific exceptions to any one or more of the following if the exception is specifically stated in a specific water quality standard. All waters of the State shall be capable of supporting desirable diversified aquatic life.

(1) Aesthetics - The present and future use of all streams and water bodies considered in these criteria. The waters of the State shall be maintained in an aesthetically attractive condition and shall meet the generally accepted aesthetic qualifications.

(2) Color - - True color shall not be increased to the extent that it will interfere with present usage and projected future use of the streams and water bodies.

(3) Floating, Suspended and Settleable Solids - Free from substances that will produce distinctly visible turbidity, solids, or scum, nor shall there be any formation of slimes, bottom deposits or sludge banks attributable to waste discharges from municipal, industrial, or other sources including agricultural practices.

(4) Taste and Odor - Taste and odor producing substances shall be limited to concentrations in the waters of the State that will not interfere with the production of potable water by reasonable water treatment methods, or impart unpalatable flavor to food fish, including shellfish, or result in offensive odors arising from the waters, or otherwise interfere with the reasonable use of the waters.

(5) Toxic Substances - None present in quantities that alone or in combination will be toxic to animal or plant life. In all cases, the level shall not exceed the $TLM_{96/100}$. Bioassay techniques will be used in evaluating toxicity utilizing methods and species of test organisms suitable to the purpose at hand. In cases where the stream is used as a public water supply, the level of toxic substances shall not exceed the levels established by the United States Public Health Service drinking water standards latest edition.

(6) Oils and Greases - There shall be no free or floating oil or grease present in sufficient quantities to interfere with the designated uses, nor shall emulsified oils be present in sufficient quantities to interfere with the designated uses.

(7) Foaming or Frothing Materials - None of a persistent nature.

(8) Nutrients - The naturally occurring nitrogen-phosphorous ratio shall be maintained. On completion of detailed studies on the naturally occurring levels of the various macro and micro nutrients, the State will establish numerical limits on nutrients where possible.

(9) Turbidity	- There shall be no substantial increase in turbidity from ambient conditions due to waste discharges.
(10) Other Materials	- Limits on other substances not specified in these revised water quality standards shall be in accordance with recommendations set by the Louisiana Stream Control Commission and/or the Louisiana Health and Social and Rehabilitation Services Administration for municipal raw water sources.

SPECIFIC WATER QUALITY CRITERIA Segment Description	WATER USES				CRITERIA						
	PRIMARY CONTACT RECREATION	SECONDARY CONTACT RECREATION	PROPAGATION OF FISH AND WILDLIFE	DOMESTIC RAW WATER SUPPLY	CHLORIDE (mg/l) Not to exceed	SULPHATE (mg/l) Not to exceed	DISSOLVED OXYGEN (mg/l) Not less than	pH RANGE	Bacteria Standard	TEMPERATURE °C	TOTAL DISSOLVED SOLIDS (mg/l)
Bayou Choctaw - Headwaters to Intracoastal Waterway		X	X		250	75	5.0	6.0 to 8.5	2	32	500

APPENDIX J

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/ Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-2	236+00	VI	M	E
	183+80	VI	M	E
	152+08	II	M	E
	130+00	IV	M	E
	112+72	II	M	E
	95+00	II	M	S
	0+00	IV	M	S
L-2A	23+90	VI	M	E
	0+00	VI	M	E
L-2A1	166+00	II	M	E
	15+00	II	M	E
	0+00	IV	M	E
L-2D	126+80	II	M	E
	47+00	II	M	E
	27+50	IV	M	E
L-3	321+75	II	M	I
	230+00	II	M	I
	0+00	IV	M	I
L-3A	347+03	II	M	E
	266+20	II	M	E
	65+00	IV	M	E
	0+00	IV	M	S
L-3A1	103+79	IV	M	E
	66+65	IV	M	E
	39+30	II	M	E
	0+00	IV	M	E
L-3A1A	46+05	II	M	E
	0+00	II	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX J

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/		
		Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-3A3	43+00	II	M	E
	0+00	II	M	E
L-3A4	45+81	II	M	E
	30+00	II	M	E
	0+00	VI	M	E
L-3A5	50+66	II	M	E
	15+00	II	M	E
	0+00	VI	M	E
L-3A6	48+00	II	M	E
	0+00	II	M	E
L-3A7	43+92	II	M	E
	0+00	II	M	E
L-3B	72+00	II	M	E
	0+00	II	M	E
L-3B1	25+00	I	O	E
	0+00	I	O	E
L-3C	45+00	II	M	E
	0+00	II	M	E
L-3D	85+00	II	M	E
	0+00	II	M	E
L-3E	45+00	II	M	E
	35+50	II	M	E
	18+86	VI	M	S
	16+90	I	O	E
L-3F	321+66	II	M	E
	60+00	II	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX J

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/ Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-4	535+00	IV	M	E
	521+91	IV	M	E
	240+00	II	M	E
	170+00	IV	M	E
	32+00	VI	M	E
L-4A	357+79	II	M	E
	40+00	II	M	E
	25+00	IV	M	E
	0+00	VI	M	S
L-4B	215+07	II	M	E
	101+13LA	II	M	E
	110+05LB	VI	M	E
	52+35LA	VI	M	E
	42+78LB	II	M	E
	0+00	II	M	E
L-4D	26+00	II	M	E
	0+00	II	M	E
L-4E	61+49	II	M	E
	0+00	II	M	E
L-4E1	30+00	II	M	E
	0+00	II	M	E
L-5	134+60	VI	M	S
	0+00	VI	M	S
L-5A	23+11	VI	M	E
	0+00	VI	M	E
L-5A1	52+35	VI	M	E
	0+00	VI	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX J

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/ Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-6	503+49	II	N	E
	49+75	II	N	E
	7+33	I	O	E
L-6A	286+32	II	M	E
	120+00	II	M	E
	0+00	IV	M	E
L-6A1	65+00	IV	M	E
	15+00	IV	M	E
	0+00	VI	M	E
L-6A2	88+58	II	M	E
	0+00	II	M	E
L-6B	51+89	II	M	E
	15+00	II	M	E
	0+00	IV	M	E
L-6C	24+18	II	M	E
	0+00	II	M	E
L-6D	0+00	II	M	E
	66+40	II	M	E
L-6D1	0+00	II	M	E
	30+55	II	M	E
L-7	98+55	VI	M	E
	89+21	VI	M	E
	0+00	IV	M	E
L-7A	113+15	II	M	E
	62+09	II	M	E
	45+00	VI	M	E
	0+00	IV	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX J

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/		
		Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-7B	131+11	I	O	E
	83+00	I	O	E
	44+00	II	M	E
	0+00	I	O	E
L-7B1	30+35	I	O	E
	17+00	I	O	E
	5+00	II	M	E
	0+00	I	O	E
L-9	180+00	I	O	E
	77+00	I	O	E
	0+00	II	M	E
L-9A	106+85	II	M	E
	40+00	II	M	E
	20+00	IV	M	E
	0+00	VI	M	E
W-1	16+00	VI	N	S
	0+00	VI	N	S
L-10	68+43	I	O	E
	45+84	I	O	E
	0+00	VI	N	E
L-11	133+00	II	M	E
	0+00LA	II	M	E
	500+00LB	II	M	E
	460+00	II	M	E
	452+00	VI	M	E
L-11A	40+78	II	M	E
	0+00	II	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

Coding System for

Inventory of Channel Work

Status	C - constructed or under contract
	P1 - planned and in an approved project but not constructed or under contract
Type of Work	I - establishment of new channel including necessary stabilization measures
	II - enlargement or realignment of existing channel or stream
	III - cleaning out natural or manmade channel (includes bar removal and major clearing and snagging operation)
	IV - clearing and removal of loose debris within channel section
	V - stabilization, by continuous treatment or localized problem areas, as primary purpose (present capacity adequate)
	VI - present capacity adequate, no work proposed
Type of Channel Prior to Project	N - an unmodified, well-defined natural channel or stream
	M - manmade ditch or previously modified channel
	O - no or practically no defined channel
Flow Condition Prior to Project	Pr - perennial: flow at all times except during extreme drought
	I - intermittent: continuous flow during some seasons of the year but little or no flow during other seasons
	E - ephemeral: flow only during periods of surface runoff, otherwise dry
	S - ponded water: no noticeable flow, caused by lack of outlet or high ground water table